SYSTEM DESCRIPTION

THE MODULES

The FB4000 system consists of one receiver module and from one to eight transmitters, known as zone modules. An additional module is a hand-held pendant transmitter that can be worn around a person's neck or on a key ring.

THE RECEIVER

The receiver has eight indicators along the left side to show the most recent active **ZONE**, and a built-in voice-chip and speaker to audibly alert the residents to any warnings or alerts. Four indicators under the speaker, monitor the entire network for four conditions, in order of increasing importance:
1: Zone module low-battery **WARNING** conditions,
2: **ARMED** or disarmed condition of optional security sensors,
3: Any **ALERT** conditions, such as a flood, person-in-distress, or security breach,
4: Receiver **CALLOUT** to the programmed phone number and activating of any optional sirens or relays.

A memory circuit will keep track of all zones so that multiple zones can have various problems and the receiver will call them out in order. The receiver has a built-in dialer and modem so that a programmed phone number can be dialed, and a 30-second recording can be made by the resident that could be a description of the property address, a person to notify, or an action to be taken. An audio connector on the rear panel allows the voice audio to be patched into a public-address or house-wide audio system, and a 12VDC connector allows a small siren or relay to be activated when the **CALLOUT** indicator lights.

The receiver is designed to either sit on its edge, or to be mounted onto, or flush-mounted into a wall. All connectors are on the rear panel to hide all wires. Power is provided by a wall-mounted adapter, or optionally, through a back-up battery module. A six-inch whip antenna is provided and also plugs into the back cover. A six-foot telephone cord with modular plug is included and is used to:
1: program the phone number to be dialed and record the 30-second user message,
2: plug into any telephone jack to dial out.

THE ZONE TRANSMITTERS

Up to eight zone modules can be monitored by one receiver. Three AA batteries supply power for each unit. Sophisticated circuitry allows each zone to be programmed to memorize a zone number at the time batteries are installed. Besides monitoring for wet flooded conditions, another connection pair can monitor environmental conditions such as temperature, smoke, or carbon monoxide, with the appropriate optional sensors. This connection is monitored at all times, along with the flood sensor. There are two additional paired connections that could be used to monitor optional intrusion sensors for security, such as window or door switches and motion sensors. These two connections can be enabled or disabled by *any* zone module or pendant **ADP** button, which arms or disarms these connections in all modules simultaneously. Besides monitoring the flood and the three miscellaneous connections, the zone transmitter also monitors its own batteries. The module will transmit different codes to the receiver describing the condition of the batteries, as well as which sensor has been activated.

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A switch labeled **ADP** inside the unit has multiple functions; this ADP button is used to:
1: check all local sensors without transmitting,
2: arm or disarm the entire network to monitor the two intrusion sensor security connections in each zone,
3: program the zone number at time of initialization,
4: send a panic, or *person-in-distress* alert.

The panic alert is similar to any other alert, in that the receiver's speaker will call out the person-in-distress alert locally, then dial out to the pre-programmed number

THE PENDANT

This is a hand-held micro-transmitter similar to a car alarm remote. It has only one button, which is also an **ADP** button, which can arm and disarm the entire network of optional security sensors, and provide the panic alert. However, the panic, or *person-in-distress* alert is different from the ADP button in the zone transmitters in that the panic alert is a *silent alarm* that immediately dials the pre-programmed phone number and gives the distress alert along with the user-programmed 30-second message. At no time is the distress called out locally, in case of a kidnap or other volatile situation.

PROGRAMMING THE RECEIVER

The receiver needs to have the telephone number and the 30-second user message recorded. Additionally, location ID programming jumpers in the receiver must match all of the zone modules, so that multiple systems in a building do not interfere with each other. Packaged systems will already have the jumpers set properly, but in rare circumstances the user may want to set these jumpers to another code.

TELEPHONE NUMBER

To record a phone number to be dialed, use a pen or other tool to move the three-position **MODE** switch located on the rear panel from the **RUN** position to the # position. Plug the modular cord into any telephone, *but not into a telephone jack that is connected to the phone system*. The receiver will act as a central office phone system and power the telephone, except that there will be no dial tone. Lift the telephone handset, dial the number to be dialed, then hang up. If you are unsure that you dialed properly, simply lift the handset and dial the number again, then hang up. Each time the handset is lifted, it will automatically erase the previous number and allow you to record a new number. The number is recorded onto the voice chip, so any number of digits can be dialed, and the receiver will dial the number exactly as you enter it, with pauses and all. A maximum of ten seconds is allowed to record the number, and if you accidentally go beyond this limit, a buzzer will sound. Be sure you take less than this time limit. You can use the redial button on the phone to make dialing quicker if you want.

30-SECOND MESSAGE

When alerted, the receiver will dial the number you already programmed and describe the **WARNING** or **ALERT** messages already built into the system, then play back any recording you wish to make, up to 30 seconds. Because you use the same telephone to record your message that you used to record the number, your message can consist of both voice and touch-tone signals. This is handy if you want the receiver to dial your pager or an alarm monitoring central station. For example, if you owned several apartments, you could have all of the receivers dial your pager, then record the message consisting of a number that would identify the calling receiver by the address, apartment number or phone number.

Alternatively, you can record a voice message that would identify the receiver by an address or phone number. You could have the receiver dial your cellular phone, so you would record the address and apartment number, and any other important information, such as the tenant's name and work number. Now, wherever you are, you will always be aware of the status of all of your apartments.

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To record your 30-second message, with the modular cord still plugged into the telephone, move the **MODE** switch to the **MESS** position. Lift the handset and record your message, or punch in any numbers you wish to show up on your pager. When done, simply hang up. Just like the recorded phone number, you may hang up at any time, and when you lift the handset again it will automatically erase the previous message. If you record beyond the 30-second limit, a buzzer will sound, and you will have to re-record your message, using less time. When you are done, move the **MODE** switch to the **RUN** position.

LOCATION ID JUMPERS

Normally, these are set at the factory to match the zone modules that came with your system. However, if you need to replace the receiver, or wish to have a second receiver monitor the same set of zone modules, you will need to set these jumpers. You will need a razor blade or fine sharp xacto knife to cut copper traces on the printed circuit board.

Remove the four screws on the rear cover and remove the cover to expose the printed circuit board. On the bottom right you will see eight jumpers marked 0 through 7, with + and - signs above and below the copper foil. Each foil can be cut in two places: the exposed area below the +, or the exposed area above the -. This is known as an 8x3 system because each jumper can be one of three states: +, -, or neutral.

IMPORTANT: EACH JUMPER MUST BE CUT IN EITHER THE + OR - POSITION, OR BOTH POSITIONS. DO NOT LEAVE ANY JUMPER BITS UNCUT IN BOTH PLACES.

Be sure that the receiver jumpers are cut in exactly the same places as the matching zone module jumpers. Install a self-adhesive zone label (several are included with the receiver) on the front of the receiver and mark the locations next to the zone numbers.

PROGRAMMING AND TESTING THE ZONE MODULES

PROGRAMMING THE LOCATION ID NUMBER

Be sure that the location ID jumpers on all of the zone modules match the receiver that will monitor them. The jumpers are programmed in exactly the same manner as the receiver.

PROGRAMMING THE ZONE NUMBER

Besides the location ID jumpers that identify the *system*, each zone module must be issued a *zone number* for the receiver to know which module is calling in. You may program several modules with the same zone number if you have the need to have multiple modules in a large room, such as an auditorium.

The zone number is programmed by using the **ADP** button inside the module. When batteries are installed, the module will start to beep slowly. If, for example, you wanted to set a module for zone three, let the module slowly beep three times, then after the third beep, push the **ADP** button to lock it into memory. The module will verify your choice by beeping three times very quickly. If you made a mistake, simply remove a battery, then reinstall the battery and follow the same procedure. NOTE: If you fail to push the **ADP** button as the module initializes, it will beep a maximum of eight times and become a zone eight module.

If you have the receiver turned on, the receiver will respond to a new zone three module by saying "*receiving update at zone three*" and lighting the **ZONE 3** light. If weak batteries are mistakenly installed in the zone module the receiver will respond with "*low battery warning at zone three*" and the zone module will beep quickly for several seconds.

TESTING MODULE SENSORS

Each zone module has a built-in flood sensor, and three pairs of connections for optional sensors. One set of connections is for an additional environmental sensor that is always active. This would be used for an optional smoke, temperature, or carbon-monoxide sensor. The other two connection pairs are for optional

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intrusion security sensors such as door or windows switches or motion sensors, and become active only when the pendant or a zone **ADP** button is used to arm the network. The connection pair marked **BG** is normally used for a break-in sensor such as a door or window switch. The connection pair marked **MG** is normally used for an PIR motion sensor. Zone modules can interface with either a normally open or normally closed set of contacts of a sensor or switch without programming because the microprocessor will automatically memorize the initial condition of the switch or sensor, and will become triggered only when that switch or sensor changes states.

To test all sensors, have all sensors connected to the zone module, and make sure all sensors and switches are in their normal, all-is-well state. Install the batteries *while holding the **ADP** button down*. This tells the zone module to enter the test mode. As you operate each switch or sensor, the zone module will beep while the sensor or switch is activated, then stop beeping as the situation is returned to normal.

After all tests are done, remove a battery so that the module can reset, then re-install the battery and allow the module to program a zone number as described above. For the zone module to pick up flooded conditions, be sure that the module is placed on the floor near whatever fixture may cause the flood.

OPTIONS

There are optional sensors that can be added to the FB4000 system. Special temperature, smoke and carbon monoxide sensors can be added to the environmental connection pair in a zone module. Any magnetic reed door switches or window or floor mat switches can be added to the **BG** connection pair. Any PIR motion sensor can be added to the **MG** connection pair.

Any 12-volt DC device can be plugged into the SIREN jack on the receiver, as long as current requirements are less than 250 milliAmps. The micropiezo siren is a good choice. Additionally, a relay can be connected to this jack to allow the receiver to seize the phone line by switching the relay contacts and directing the phone line away from the house wiring. Additionally, the relay contacts can activate an **X-10** module for flashing house lights.

The emergency power module connects between the AC adapter and the receiver and provides power for up to three days with no AC power, and will charge the gell-cell during normal conditions.

The pendant option allows arming and disarming of the intrusion sensors, and silent alarm person-in-distress features.

The ***Professional Designers System*** allows a professional to re-record the voice chip for actual locations such as *living room* and *family room* instead of the factory-recorded *zone one* to *zone eight* messages. This is an ideal step-up for high-end homes and condos, or for specialized industrial use in businesses or factories. This includes a voice-chip programmer with complete recording and editing features. Be sure to order the receiver with a plug-in voice chip.