

**B1225**  
**ALARM REPORTING UNIT**  
**INSTRUCTION MANUAL**

Revision 2.1  
May 2002

** BARNETT ENGINEERING LTD.**

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# 1 OPERATION

## 1.1 GENERAL

The B1225 ARU provides remote status monitor and control functions through any land mobile radio system. When one or more of its inputs enters an alarm state, the alarm is announced over the radio system using voice, paging tones, and/or data signalling tones. If the alarm is not acknowledged, it will be transmitted again after a programmed time interval. Four form-C relay contacts are available for remote control functions using DTMF codes received over the radio.

All operational features and voice messages are programmed by plugging a Touch Tone telephone set into the B1225 program jack. For applications requiring the four DTMF digits not found on a standard telset, a 16 button telephone must be used. Acknowledge codes, relay control strings, paging codes, and debounce times are programmed in this way. Refer to the "Programming" section for further information.

## 1.2 MESSAGE TRANSMISSION

When an alarm goes into the active state or at the expiration of a timing interval, the B1225 goes through the transmission sequence described below:

- The radio's channel monitor signal is checked to determine if the channel is busy. A busy condition causes the ARU to wait up to one minute until the channel is free before transmitting. After one minute of waiting the B1225 will transmit regardless of the monitor signal.
- Push-to-talk (PTT) is activated and the system warmup time is waited out.
- The information stored in the "Windows" program section is output to the radio. These windows may contain delays, alarm voice messages, paging tones, or DTMF-ON tags associated with that alarm.
- The PTT will be dropped and the ARU will listen for the ACK code to be received. If the alarm is not acknowledged, then the ARU starts its interval timer. When the interval timer expires, this sequence will again be repeated.

When the alarm returns to normal, the B1225 will send (if so programmed) the DTMF-OFF code. This is done in this order:

- The radio's channel monitor signal is checked to determine if the channel is busy. A busy condition causes the ARU to wait up to one minute until the channel is free before transmitting. After one minute of waiting the B1225 will transmit regardless of the monitor signal.
- Push-to-talk is activated and the system warmup time is waited out.
- The DTMF-OFF code for the alarm point(s) is transmitted
- The PTT is removed.

The DTMF-ON and DTMF-OFF code transmissions allow the B1225 to send status and control information to other DTMF signalling equipment.

## 1.3 CONTROL COMMANDS

While the ARU is in the idle condition it can receive DTMF commands from the radio system.

### ACKNOWLEDGE COMMANDS

The basic acknowledge (ACK) code is determined by the programmer or left as the default "1234". A number of ACK option functions can be called up by sending an additional digit following the basic ACK code. When the ARU has received the last digit of the ACK code, it waits for two seconds to see if a command digit is also being sent. If the extra digit is not received, the alarms are acknowledged and the "Alarm Acknowledged" phrase is spoken on the radio system. Receipt of a command digit will affect the operation of the acknowledge operation as follows:

#### Command digit "2" - ACKNOWLEDGE

Functionally equivalent to the ACK code by itself except the response from the ARU follows immediately instead of waiting for two seconds.

#### Command digit "4" - INTERROGATE

Existing alarms are not acknowledged. The ARU activates the transmitter and speaks the site identifier followed by existing alarms, if any, or the phrase "No Alarm" if all inputs are normal. Voice messages are sent without any signalling, even if the ARU was programmed for a signalling option.

#### Command digit "5" - LONG INTERVAL TIMER

This code is a form of temporary acknowledgement which loads the interval timer with 60 minutes and then announces "Alarm Acknowledged for Six Zero Minutes" on the radio system. If alarms still exist after the 60 minutes have passed, the ARU will resume its alarm announcement sequence.

#### Command digit "8" - TEST

The ARU's response to receipt of the TEST code is identical to that of the INTERROGATE code, except signalling (if so programmed) is included in the transmission.

### RELAY CONTROL

By programming the "Relay ON code" and "Relay OFF code" as given in the programming section, the B1225's relays may be remotely controlled.

When the ARU receives a Relay ON (or OFF) code over the radio system, it will turn the corresponding relay on (or off).

## 1.4 MEMORY STORAGE

The B1225 holds all of its operating parameters in battery-backed-up RAM. Internally, all operating parameters are stored in two separate memory locations: a working space and a redundant storage space. Both memory spaces are protected by a security code, ensuring that all information is valid. Should one piece of data become corrupted in either of the data spaces, it is automatically replaced with the valid data from the other location.

If a major error occurs and both the working and the storage data spaces have become corrupted, the B1225 will reset its parameters to default values. At this point, the radio is keyed and the announcement “(Site ID)-PROGRAM CODE ERROR” is made.

Security codes and the RAM redundancy affect only the operating parameters, and are not used for the stored site identifier or for alarm voices.

## 2 INSTALLATION

The B1225 should be mounted in a clean, dry area suitable for electronic equipment. All connections, except for the programming telephone, are made to the compression screw terminals TB1 (power and signals) and TB2 (relay outputs).

The ground terminal is used as the common reference for the alarm inputs, the monitor input, the local acknowledge, and the PTT driver transistor. Unless the balanced line option is used, the transmit and receive audio signals are also referenced to the common ground.

Refer to Figure 1 for wiring instructions.

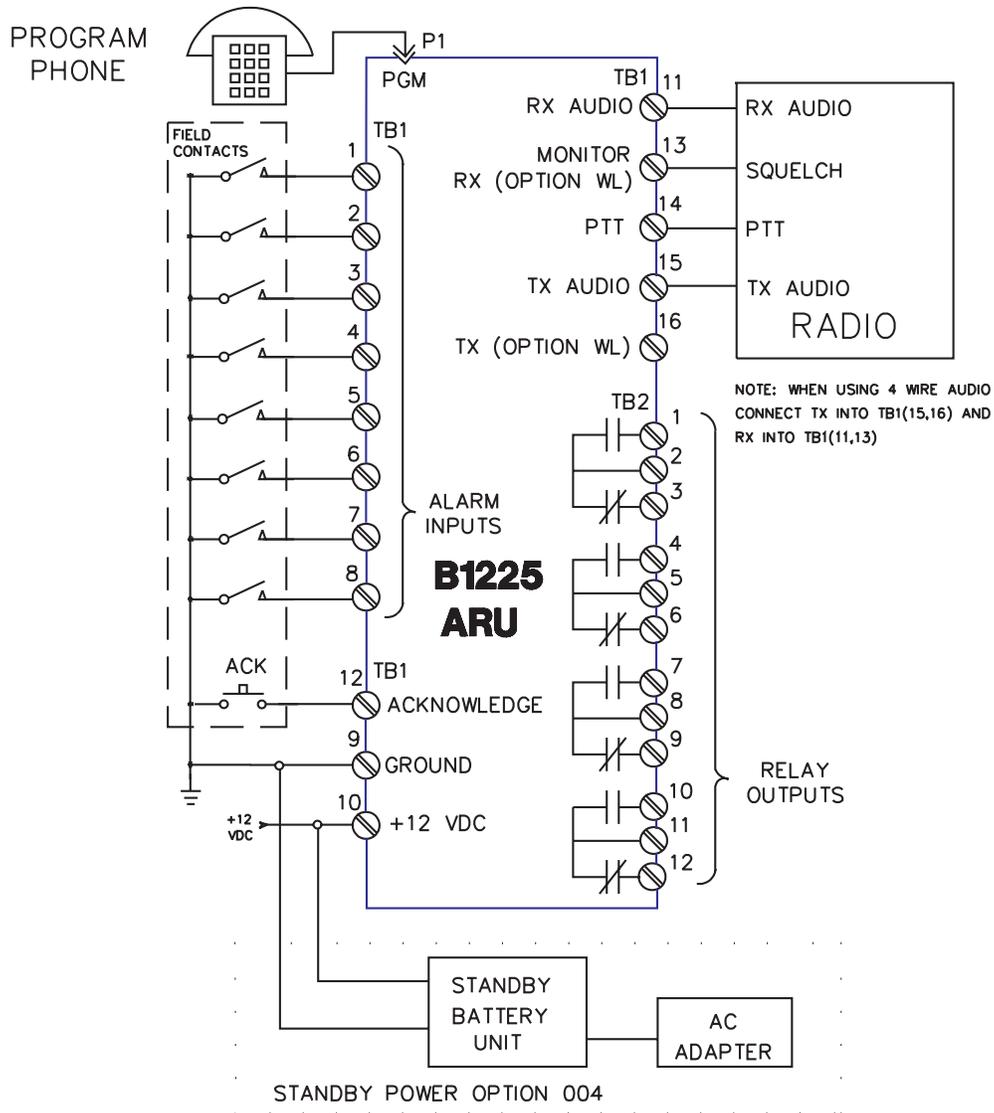


Figure 1 Installation Wiring

**POWER** TB1-9 Neg. TB1-10 Pos.

The B1225 requires 11 to 16 VDC, negative ground to operate. Typical operating current is 100 mA, but may increase if all relays or LEDs are on. Connect power to the board after all other connections are completed.

### **ALARM INPUTS** TB1-1 thru TB1-8

The optically coupled alarm inputs sense either ground closures or open circuits to indicate an alarm condition. The alarm state can be defined for all inputs as either open or closed to ground as determined by the programming. The alarm ground must be the same as the power ground. Do not apply any voltage source to the input terminals. Active current on each input is 10 mA.

### **LOCAL ACKNOWLEDGE INPUT** TB1-12

A momentary low on this line will acknowledge any existing alarms and cause the “Alarms Acknowledged” message to be sent out on the radio system. This input is active at all times; whatever activity the ARU is performing will be terminated by this acknowledgement.

### **MONITOR INPUT** TB1-13

This line is used to monitor the receiver squelch circuit in the radio for a channel busy indication. An adjustable voltage comparator determines if the squelch signal is above or below the threshold. The “squelch programming” should be set so that the unit will transmit when the channel is free and wait if the channel is busy.

### **TX AUDIO** TB1-15

This 600 ohm, unbalanced audio driver connects to the radio transmitter. It can be attached to the microphone or, if an impedance match exists, the auxiliary tone input of the radio. Level control is through potentiometer R3. A balanced, 600 ohm output will be provided between TB1-15 and TB1-16 if the wireline (WL) option is chosen.

### **RX AUDIO** TB1-11

This 10k ohm, unbalanced input is connected to the receiver audio signal from the radio. DTMF signals between 25 mV<sub>rms</sub> and 775 mV<sub>rms</sub> will be decoded.

A balanced, 600 ohm input will be provided between TB1-11 and TB1-13 for the RX audio if the wireline option (option WL) is chosen. When WL is used the RX monitor function is removed.

### **PTT** TB1-14

A Darlington power driver provides a switched ground to activate the radio transmitter.

### **PROGRAM PORT** P1 (PGM)

A Touch Tone telephone set is attached directly to this jack to permit local programming of the ARU.

*Always power up the unit with the programming phone ON-HOOK. Programming the unit may then begin by taking the program phone OFF-HOOK.*

*Do not connect a telephone line onto this port as extensive damage to the internal circuitry may result.*

### **RELAY OUTPUTS** TB2

Four form C relay contacts are available on TB2. Table 1 shows the connections available at each pin. The relays are controlled by receiving DTMF digits from the radio system that

correspond to its internally programmed codes. Refer to the programming section for further details.

TB 2	FUNCTION	
1	NO contact	Relay 1
2	common	
3	NC contact	
4	NO contact	Relay 2
5	common	
6	NC contact	
7	NO contact	Relay 3
8	common	
9	NC contact	
10	NO contact	Relay 4
11	common	
12	NC contact	

TABLE 1 RELAY CONNECTIONS

## 3 PROGRAMMING THE B1225

### 3.1 GENERAL

All operating parameters and alarm voice messages of the ARU are programmable by the user. As shipped, the unit will either operate in the default mode or will have the factory testing codes in memory. The ARU must be programmed by the user to operate to their individual requirements.

Program data is stored in a batter-protected RAM with a 30 day retention period. After 30 days without external power, the ARU will lose its programmed data and revert to the default state. The contents of the RAM are periodically tested. An error detected at any RAM address will result in default operation.

The default conditions are shown at the end of this section.

The ARU can be programmed from any Touch Tone (DTMF) phone. It cannot be programmed from a rotary dial set, a touch pulse set, or the radio system. The user sends DTMF digits to the ARU to effect programming. Operating parameters are spoken to the user in plain language (e.g. "Enter program code"). The user then has ten seconds to send the appropriate DTMF digits to change the parameter or move to the next parameter. If an incorrect DTMF sequence is entered, the ARU will respond with "Error" followed by a repetition of the previously spoken parameter. The user then has another try at changing the parameter. This cycle will continue indefinitely, as long as the the programming phone is off-hook.

Each data entry requires some means to indicate that the end of the sequence has been reached. This is equivalent to entering information into a computer keyboard, where the enter or return key is used to indicate the end of a line. As there is no return key on a Touch Tone phone, an alternative method is used to indicate the end of a string of digits. Return for the ARU is the digit \* (star or asterisk) sent twice with no more than one second between the end of the first \* and the beginning of the second \*. One second is longer than most people realize, and entry of consecutive asterisks can be done in the required time frame without rushing. In fact, if the gap between the digits is too short, the ARU will recognize only one of the digits and an error message will follow.

If return is required following the DTMF digit \* included in an operating parameter (e.g. DTMF code of 98 \* ), the user must wait more than one second before entering the carriage return after sending the last asterisk, i.e.

enter: 9 - 8 - \* - wait more than one second - \* - \*

If the wait is less than one second, the ARU will interpret the sequence as 9 - 8 - Return, with an extraneous \* at the end.

## 3.2 PROGRAMMING SEQUENCE

To program the B1225, you must use a DTMF telephone connected into the program port on the side of the unit.

Upon connecting your Touch Tone telephone into the program port, the “Enter Program Code” message will be announced. At this point one of the 12 program codes can be selected to start the programming sequence.

The B1225 will then continue on with its alarm transmission sequence (as determined by the interval timers) once programming is completed.

*If the B1225 has never been programmed or has lost its memory, the site identifier and all alarm tags will be simply noise. This noise may be very loud, depending upon hardware adjustments. USE CAUTION when listening to the programming parameters, especially initially, as loud blasts may be given as the stored voice.*

The following section describes the programming features available along with examples. The descriptions show the interactive nature of the B1225 with user entries indicated by bold italics.

### PROGRAM CODE

Program Code selection is the highest level in the programming menu and is automatically entered when the program phone goes off hook. From here, the different functions of the ARU can be selected using the appropriate program code. To program the B1225 several program codes will be used to allow various codes and conditions to be set.

#### PROGRAM CODES ARE:

- 0 \*\* : ACKNOWLEDGE CODE
- 1 \*\* : VOICE MESSAGES OF SITE ID AND ALARMS
- 2 \*\* : SIGNALLING WINDOWS
- 3 \*\* : TIMERS INTERVALS AND REPEATS
- 4 \*\* : DTMF ON/OFF SIGNALLING TAGS
- 5 \*\* : ALARM DELAY TIME
- 6 \*\* : ALARM FORMAT
- 7 \*\* : SQUELCH POLARITY
- 8 \*\* : RELAY CONTROL TAGS
- 9 \*\* : RELAY FORMAT
- 10 \*\* : NUMBER OF EXPANDERS
- 11 \*\* : ACKNOWLEDGE REQUEST
- 12 \*\* : EXPANDER ID
- ## \*\* : RESET PROGRAM MEMORY TO DEFAULTS
- 13 \*\* : AUTO-REPORTING

Each of these menu items is described further in the following sections.

## **0 \*\* : ACKNOWLEDGE CODE**

The ACKNOWLEDGE (ACK) code is used to acknowledge any pending alarms, thus terminating the alarm transmission sequence. Acknowledgement can take place over the radio system using a radio equipped with a DTMF encoder. The ACK code can be any 1 to 4 digit sequence.

EXAMPLE: The ACK code is 555 and you want to change it to 777.

ARU: ENTER PROGRAM CODE  
**YOU: 0 \*\* (select acknowledge code)**  
ARU: ACKNOWLEDGE CODE IS 555  
**YOU: 777 \*\***  
ARU: ACKNOWLEDGE CODE IS 777  
**YOU: \*\***  
ARU: ENTER PROGRAM CODE

## **1 \*\* : VOICE MESSAGES**

The site identifier and each of the eight alarm inputs are entered using the programming phone. Each message allows for two seconds of stored voice.

*An unprogrammed voice message will be heard as a loud noise. DO NOT hold the telephone handset directly to your ear when programming these messages for the first time.*

After the ARU has announced the currently stored voice alarm message, the operator may go on to the next message, change the current message, or exit back to the main menu. When programming a voice message, begin following the prompt beep during the time that the record (REC) indicator is on.

VOICE CONTROLS ARE:

**1 \*\* :** ADVANCE to the next voice message  
**2 \*\* :** CHANGE the existing voice message  
**3 \*\* :** EXIT to the main menu

EXAMPLE: You want to change the site ID from "10-36 Battery" to "Ajax Compressor Station". You are at the main menu.

ARU: ENTER PROGRAM CODE  
**YOU: 1 \*\* (select voice messages)**  
ARU: SITE IS 10 OF 36 BATTERY  
**YOU: 2 \*\* (selecting CHANGE)**  
ARU: BEEP - (record light comes on)  
**YOU: (speaking): AJAX COMPRESSOR STATION**  
ARU: SITE IS AJAX COMPRESSOR STATION  
**YOU: \*\***  
ARU: ALARM NUMBER 1 IS HIGH GAS PRESSURE

## 2 \*\* : SIGNALLING WINDOWS

When a new alarm is presented or the interval timer expires on an existing unacknowledged alarm, the ARU sequentially outputs windows 1 through 6 to the radio. These windows contain signalling information such as paging tones, DTMF tones, voice and delays.

EXAMPLE: When an alarm occurs, you want to set off a two tone pager, send the DTMF string "123", delay for 4 seconds, send a voice message, and then send another DTMF string of "456".

Window information would contain:

WINDOW 1	2 tone paging code
WINDOW 2	DTMF string "123"
WINDOW 3	4 second delay
WINDOW 4	VOICE ANNOUNCEMENT
WINDOW 5	DTMF string "456"
WINDOW 6	EMPTY

When an alarm occurs, the sequence that will be sent is:

PAGING TONES  
DTMF CODE 123  
DELAY  
VOICE  
DTMF CODE 456

WINDOW CONTROLS ARE:

- 0 \*\* :** EMPTY
- 1 \*\* :** VOICE - The site ID plus the alarms present are announced.
- 2 \*\* :** 2 TONE PAGING - The tones entered (A and B) must be greater than 100.0 Hz and less than 2000.0 Hz. The frequency is input as four or five digits, the last digit being tenths of Hertz. To select group call, make tone A equal to tone B.
- 3 \*\* :** SINGLE TONE - The single tone entered must be greater than 100 Hz and less than 2000 Hz. Three or four digits may be entered, the last digit being units of Hertz.
- 4 \*\* :** ALERT TONE - A beeping alert tone.
- 5 \*\* :** 5 TONE PAGING - a five tone CAP code must be input here, with each digit being from 0 to 9. The 5 tone format must also be input as a value from 0 to 4 corresponding to 0 = Motorola, 1 to 4 are undefined. The code is entered as a six digit number with the first digit corresponding to the preamble tone and the remaining five digits representing the page code.
- 6 \*\* :** DTMF STRING - THE DTMF string entered must be eight digits long or less.
- 7 \*\* :** DELAY - A delay of up to 9.9 seconds is possible by using this feature. Two digits must be entered, the last one being tenths of seconds.
- 8 \*\* :** EXIT TO MAIN MENU
- 9 \*\* :** NEXT WINDOW

EXAMPLE: You want to change window number 3 from DTMF to 2 tone paging (individual, tone A = 986.3 Hz, tone B = 1032.0 Hz). Windows number 1,2,3, and 4 are ALERT, Voice, DTMF, and ALERT respectively. You are at the main menu.

ARU: ENTER PROGRAM CODE

**YOU: 2 \*\***

ARU: WINDOW NUMBER 1 IS ALERT

**YOU: \*\***

ARU: WINDOW NUMBER 2 IS VOICE

**YOU: \*\***

ARU: WINDOW NUMBER 3 IS DTMF

**YOU: 2 \*\* (choosing 2 tone paging)**

ARU: TONE A IS 648.3 Hertz

**YOU: 9 8 6 3 \*\* (changing tone A)**

ARU: TONE A IS 986.3 Hertz"

**YOU: \*\***

ARU: TONE B IS 1234.5 Hertz"

**YOU: 1 0 3 2 0 \*\***

ARU: TONE B IS 1032.0 Hertz"

**YOU: \*\***

ARU: WINDOW NUMBER 3 IS 2 - TONE

(If you now wish to verify the two-tone values, enter 2-tone again, as if to change it).

**YOU: 2 \*\***

ARU: TONE A IS 986.3 Hertz (correct)

**YOU: \*\***

ARU: TONE B IS 1032.0 Hertz (correct)

**YOU: \*\***

ARU: WINDOW NUMBER 3 IS 2-TONE

**YOU: \*\***

ARU: WINDOW NUMBER 4 IS ALERT

**YOU: \*\***

ARU: WINDOW NUMBER 5 IS EMPTY

**YOU: \*\***

ARU: WINDOW NUMBER 6 IS EMPTY

**YOU: 8 \*\***

ARU: ENTER PROGRAM CODE (back at main menu)

### **3 \*\* TIMERS, INTERVALS AND REPEATS**

Timer A, Timer B and Repeats are programmed sequentially in this section.

#### **TIMER A**

TIMER A can be set from 1 to 599 minutes. It determines the length of time after the alarm announcement that the ARU waits before starting the alarm announcement sequence again.

Annunciation at TIMER A intervals is halted by any of the following events:

alarms return to normal

ACK code is received

local ACK input is activated

TIMER A has cycled TIMES A (see TIMES A) and TIMER B is in effect

EXAMPLE: TIMER A is set for 60 minutes and you want to change it to 30 minutes.

ARU: ENTER PROGRAM CODE

**YOU: 3\*\***

ARU: TIMER A IS 60 MINUTES

**YOU: 30\*\***

ARU: TIMER A IS 30 MINUTES

**YOU: \*\***

## TIMER B

TIMER B takes over from TIMER A and is programmed in the same manner.

For example, the TIMER A is set at 30 minutes and TIMES A to 3. TIMER B is set at 60 minutes. Here's what would happen:

An alarm is activated at 1:00 A.M. The ARU reports it but no ACK is received. The alarm would be repeated at 1:30 A.M., 2:00 A.M. and 2:30 A.M. It would then come under the control of TIMER B and the sequence would start again after 60 minutes.

EXAMPLE: The TIMER B timer is set at 50 minutes and you want to change it to 120 minutes.

ARU: TIMER B IS FIVE ZERO MINUTES

**YOU: 120\*\***

ARU: TIMER B IS ONE TWO ZERO MINUTES

**YOU: \*\***

The most common application for two stage interval timing is on a busy radio channel. When the alarm first occurs, it is repeated at short intervals (TIMER A). After cycling through TIMES A number of alarm announcements without receipt of the ACK code, it makes no sense to continue using valuable air time with the short interval timer. TIMER B can be set to a longer duration (30 minutes for example). The alarm announcement sequence then continues indefinitely at intervals set by the TIMER B timer.

*When timer B is set to 0, the B1225 unit will automatically acknowledge itself after timer A and times A has expired.*

## TIMES A

TIMES A is the number of times the message is reported at TIMER A minutes before proceeding to TIMER B. It can be set from 1 to 9 times.

EXAMPLE: TIMER A is set for 2 minutes. You want the alarm message to go out 9 times at 2 minute intervals before moving to TIMER B. TIMES A is presently set at 6 times.

ARU: TIMES A IS 6

**YOU: 9\*\***

ARU: TIMES A IS 9

**YOU: \*\***

## REPEATS

REPEATS is the number of times the message will be spoken before requesting acknowledgement. It can be set to any number from 1 to 9.

If repeats was set at 2, the alarm message would sound like this:

```
AJAX COMPRESSOR SITE AC POWER FAILURE
AJAX COMPRESSOR SITE AC POWER FAILURE
ENTER ACKNOWLEDGE CODE
```

EXAMPLE: REPEATS is set at 1 and you want to change it to 3.

```
ARU: REPEATS IS 1
YOU: 3 **
ARU: REPEATS IS 3
YOU: **
```

#### **4 \*\*: DTMF ON/OFF SIGNALLING TAGS**

When an alarm becomes active or inactive, the B1225 is capable of sending a DTMF string associated only with that alarm point. Each alarm can have one string for active (ON) and one string for return to normal (OFF). 16 strings in total are available.

Should the user not require a DTMF string to be sent, the string may be set “EMPTY” by entering “# \*\*”.

When programming these tags, the unit will request the alarm number to be programmed. Since there are 8 alarms, any number other than 1 to 8 will give an error.

The DTMF strings entered must be eight digits long or less.

EXAMPLE: When alarm number 6 becomes active, you wish to notify a central alarm panel by sending the DTMF codes “123”. When the compressor starts up again, you want the B1225 to send a code of “456” to the central alarm panel. You start programming from the main menu.

```
ARU: ENTER PROGRAM CODE
YOU: 4 **
ARU: ENTER ALARM NUMBER
YOU: 6 **
ARU: ALARM NUMBER 6 DTMF ON CODE IS 55521
YOU: 1 2 3 **
ARU: ALARM NUMBER 6 DTMF ON CODE IS 123
YOU: **
ARU: ALARM NUMBER 6 DTMF OFF CODE IS 593
YOU: 4 5 6 **
ARU: ALARM NUMBER 6 DTMF OFF CODE IS 456
YOU: **
```

In the above example (assuming that all of the signalling windows are empty except number 1 - which is voice), the alarm sequence will go as follows:

Compressor goes down:

```
AJAX COMPRESSOR
COMPRESSOR DOWN
123 (DTMF code)
```

Compressor returns to running:

```
456 (DTMF code)
```

## 5 \*\*: ALARM DELAY TIME (DEBOUNCE TIME)

The alarm delay time (debounce time) allows for the ARU to ignore transients on its inputs. The debounce time must be between 0.1 and 19.9 seconds. The input must remain active for this period of time in order for it to be considered in the alarm state.

A two or three digit debounce time must be entered.

EXAMPLE: You want a 3.0 second debounce time. You are at the main menu.

ARU: ENTER PROGRAM CODE

**YOU: 5 \*\***

ARU: ALARM DELAY TIME IS 0.1 SECONDS

**YOU: 3 0 \*\***

ARU: ALARM DELAY TIME IS 3.0 SECONDS

**YOU: \*\***

## 6 \*\*: ALARM FORMAT

The alarm format specifies whether the alarms are normally open (N.O. - requiring a ground closure to become active) or normally closed (N.C. - requiring a release from ground to become active).

The alarm format must be either 0 or 1.

ALARM FORMAT controls are:

0 \*\*: N.O.contacts

1 \*\*: N.C. contacts

\*\* : return to main menu

EXAMPLE: You are changing your system to use normally closed contacts rather than the normally open ones used previously. You are at the main menu.

ARU: ENTER PROGRAM CODE

**YOU: 6 \*\***

ARU: ALARM FORMAT IS 0

**YOU: 1 \*\* (set to 1)**

ARU: ALARM FORMAT IS 1

**YOU: \*\***

## 7 \*\*: SQUELCH POLARITY

The squelch polarity is used to determine when the radio channel is free and the B1225 can grab the channel and begin speaking.

The B1225 uses the “monitor” pin connected to the radio’s COS to determine when the channel is free.

SQUELCH CONTROLS are:

0 \*\*: the channel is free when monitor is high

1 \*\*: the channel is free when monitor is low

\*\* : return to main menu

EXAMPLE: The radio you are using has a COS that goes to +8VDC when the channel is free, and to +2 VDC when the channel is busy. The squelch potentiometer has been set for a threshold of 5 VDC (see section on setting squelch level).

ARU: ENTER PROGRAM CODE  
**YOU: 7\*\***  
ARU: CODE NUMBER 1 IS 1  
**YOU: 0\*\***  
ARU: CODE NUMBER 1 IS 0  
**YOU: \*\***

### **8\*\*:** RELAY CONTROL TAGS

The B1225 contains 4 relays allowing for digital control at remote locations. The ARU accepts DTMF strings from the radio system and interprets them as ON or OFF control for the relays.

Each DTMF control string may be up to eight characters.

EXAMPLE: You want relay number 1 to turn ON when the ARU receives the string 25Q and OFF when it receives the string 251. You are at the main menu.

ARU: ENTER PROGRAM CODE  
**YOU: 8\*\***  
ARU: RELAY NUMBER 1 DTMF ON CODE IS 51324#2  
**YOU: 2 5 Q (delay) \*\***  
ARU: RELAY NUMBER 1 DTMF ON CODE IS 25 \*  
**YOU: \*\***  
ARU: RELAY NUMBER 1 DTMF OFF CODE IS 2A460 \*  
**YOU: 2 5 1 \*\***  
ARU: RELAY NUMBER 1 DTMF OFF CODE IS 251  
**YOU: \*\* (you continue until all relay strings have been assigned)**

### **9\*\*:** RELAY FORMAT

The relay format specifies the type of relay that is being used. Each relay may be of a different format. If a relay is required that must be on for a specified time, this time must also be entered.

RELAY CONTROLS are:

- 0 \*\* : STANDARD RELAY - Electrically held on
- 1 \*\* : LATCHED RELAY - Mechanically held (two coils)  
-must be specified at time of order
- 2 \*\* : Energized for the programmed interval
- \*\* : Advance to the next relay.

The voices spoken when a relay is turned on or off may be disabled in this section. After proceeding through the relay format and timer section, the relay voice section is presented. Set the relay voice to 0 to disable it and to 1 to enable it.

EXAMPLE: All of the relays are currently set at momentary (type 0). You wish relay number 3 to turn on for 15 seconds only, and then turn off (timed). You also want to disable the voices spoken when a relay is turned on or off. You are at the main menu.

ARU: ENTER PROGRAM CODE  
**YOU: 9\*\***  
ARU: RELAY NUMBER 1 FORMAT IS 0  
**YOU: \*\***  
ARU: RELAY NUMBER 2 FORMAT IS 0  
**YOU: \*\***  
ARU: RELAY NUMBER 3 FORMAT IS 0  
**YOU: 2\*\***  
ARU: RELAY NUMBER 3 FORMAT IS 2  
**YOU: \*\***  
ARU: RELAY NUMBER 4 FORMAT IS 0  
**YOU: \*\***  
ARU: RELAY ON TIMER IS 90 SECONDS  
**YOU: 15\*\***  
ARU: RELAY ON TIMER IS 15 SECONDS  
**YOU: \*\***  
ARU: Relay voice is ON  
**YOU: 0\*\***  
ARU: Relay voice is OFF

### **10 \*\*: NUMBER OF EXPANDERS**

Up to nine expanders can be added to a B1225 system. Refer to the manual on the “B1225E Expander” in order to provide each expander with an address.

EXAMPLE: There is one expander and you want to add another expander.

ARU: CODE NUMBER 2 IS 1  
**YOU: 2\*\***  
ARU: CODE NUMBER 2 IS 2  
**YOU: \*\***

### **11 \*\*: ACKNOWLEDGE REQUEST**

The acknowledge request specifies whether or not “Enter Acknowledge Code” will be announced after the alarms.

ACK CONTROLS are:

- 0 \*\*: ACKNOWLEDGE VOICE ON - “Enter Acknowledge Code” will be spoken after the alarms have been announced.
- 1 \*\*: ACKNOWLEDGE VOICE OFF - Only the alarms will be announced.

EXAMPLE: You want the B1225 unit to announce the requirement of an acknowledge code.

ARU: ENTER PROGRAM CODE  
**YOU: 1\*\***  
ARU: ACKNOWLEDGE VOICE IS ON  
**YOU: \*\***

When the ARU goes into the alarm condition it will announce

AJAX COMPRESSOR STATION  
COMPRESSOR DOWN

## ENTER ACKNOWLEDGE CODE

At this time the unit can be acknowledged by sending the correct DTMF code.

EXAMPLE: You do not want the acknowledge code request.

ARU: ENTER PROGRAM CODE

**YOU: 11 \*\***

ARU: ACKNOWLEDGE VOICE IS ON

**YOU: 1 \*\***

ARU: ACKNOWLEDGE VOICE IS OFF

When the ARU goes into alarm it will announce:

AJAX COMPRESSOR STATION

COMPRESSOR DOWN

Although the acknowledge code is not requested it still accepts the code if it is received.

## **## \*\*: RESET TO DEFAULTS**

The reset (empty) code is used to set all of the programming parameters into the default state. The code used to clear the memory is “#31.” This command does not affect the messages stored for the SITE ID or alarm points.

EXAMPLE:

ARU; ENTER PROGRAM CODE

**YOU: ## \*\***

ARU: ENTER EMPTY CODE

**YOU: # 3 1 \*\***

ARU: PROGRAM IS EMPTY

The program parameters are now at their default values as described in the “PROGRAMMED PARAMETERS” section.

## **12 \*\*: EXPANDER ID**

Each expander has the option of having its own site ID or no ID. When the Expander ID is enabled the voice messages will go out as:

Master Site ID

Master Alarms

Expander 1 Site ID

Expander 1 Alarms

Expander 2 Site ID

Expander 2 Alarms

... etc.

In the case where the Expander ID is turned off the voice messages will go out as:

Master Site ID

Master Alarms

Expander 1 Alarms

Expander 2 Alarms

... etc.

EXPANDER ID controls are:

- 0 \*\* : Expander ID off
- 1 \*\* : Expander ID on

### **13 \*\*: AUTO-REPORTING**

Using the auto-reporting feature causes the B1225 to automatically report a DTMF string at regularly timed intervals. This operation is completely independent of alarm reporting. In conjunction with a DTMF decoding device at the receiving end, it allows you to determine whether or not the B1225 is still operating without visiting the remote site.

The DTMF string and the site timer are programmed sequentially in this section.

#### **STRING**

The reported string may be from one to eight DTMF digits. The default code is 777.

#### **TIMER**

The timer may be set for the following values:

- 0: default setting; auto-reporting disabled
- 1-199: interval in tens of minutes

EXAMPLE: You want the B1225 to automatically report the DTMF string 3456 every twelve hours (720 minutes). You have just picked up the programming phone.

ARU: ENTER PROGRAM CODE

**YOU: 13\*\***

ARU: SITE DTMF IS 7 7 7

**YOU: 3 4 5 6 \*\***

ARU: SITE DTMF IS 3 4 5 6

**YOU: \*\***

ARU: SITE TIMER IS 0 TIMES 1 0 MINUTES

**YOU: 7 2 \*\***

ARU: SITE TIMER IS 7 2 TIMES 1 0 MINUTES

**YOU: \*\***

## 4 PROGRAMMING LOG

B1225 - UNIT SERIAL NUMBER

0 - ACK CODE _____	1234
1- VOICE STORAGE	
SITE ID _____	
ALARM 1 _____	
ALARM 2 _____	
ALARM 3 _____	
ALARM 4 _____	
ALARM 5 _____	
ALARM 6 _____	
ALARM 7 _____	
ALARM 8 _____	
2 - SIGNALLING WINDOWS	
WINDOW 1 - TYPE: _____	4 (Alert)
DATA: _____	
WINDOW 2 - TYPE: _____	1 (Voice)
DATA: _____	
WINDOW 3 - TYPE: _____	0 (Empty)
DATA: _____	
WINDOW 4 - TYPE: _____	0
DATA: _____	
WINDOW 5 - TYPE: _____	0
DATA: _____	
WINDOW 6 - TYPE: _____	0
DATA: _____	
3 - TIMERS/REPEATS	
TIMER A (minutes) _____	2
TIMER B (minutes) _____	20
TIMES A _____	2
REPEATS _____	1
4 - DTMF ON/OFF STATUS TAGS	
INPUT 1 ON _____	Empty
INPUT 1 OFF _____	Empty
INPUT 2 ON _____	Empty
INPUT 2 OFF _____	Empty
INPUT 3 ON _____	Empty
INPUT 3 OFF _____	Empty
INPUT 4 ON _____	Empty

DEFAULT PARAMETERS



INPUT 4 OFF	Empty
INPUT 5 ON	Empty
INPUT 5 OFF	Empty
INPUT 6 ON	Empty
INPUT 6 OFF	Empty
INPUT 7 ON	Empty
INPUT 7 OFF	Empty
INPUT 8 ON	Empty
INPUT 8 OFF	Empty
5 - RELAY (DEBOUNCE) TIME (sec.)	0.5
6 - ALARM FORMAT (0 = N.O.,1 = N.C.)	0
7 - SQUELCH POL. (0 = TX ON HIGH)	0
8 - RELAY CONTROL TAGS	
RELAY 1 ON	Empty
RELAY 1 OFF	Empty
RELAY 2 ON	Empty
RELAY 2 OFF	Empty
RELAY 3 ON	Empty
RELAY 3 OFF	Empty
RELAY 4 ON	Empty
RELAY 4 OFF	Empty

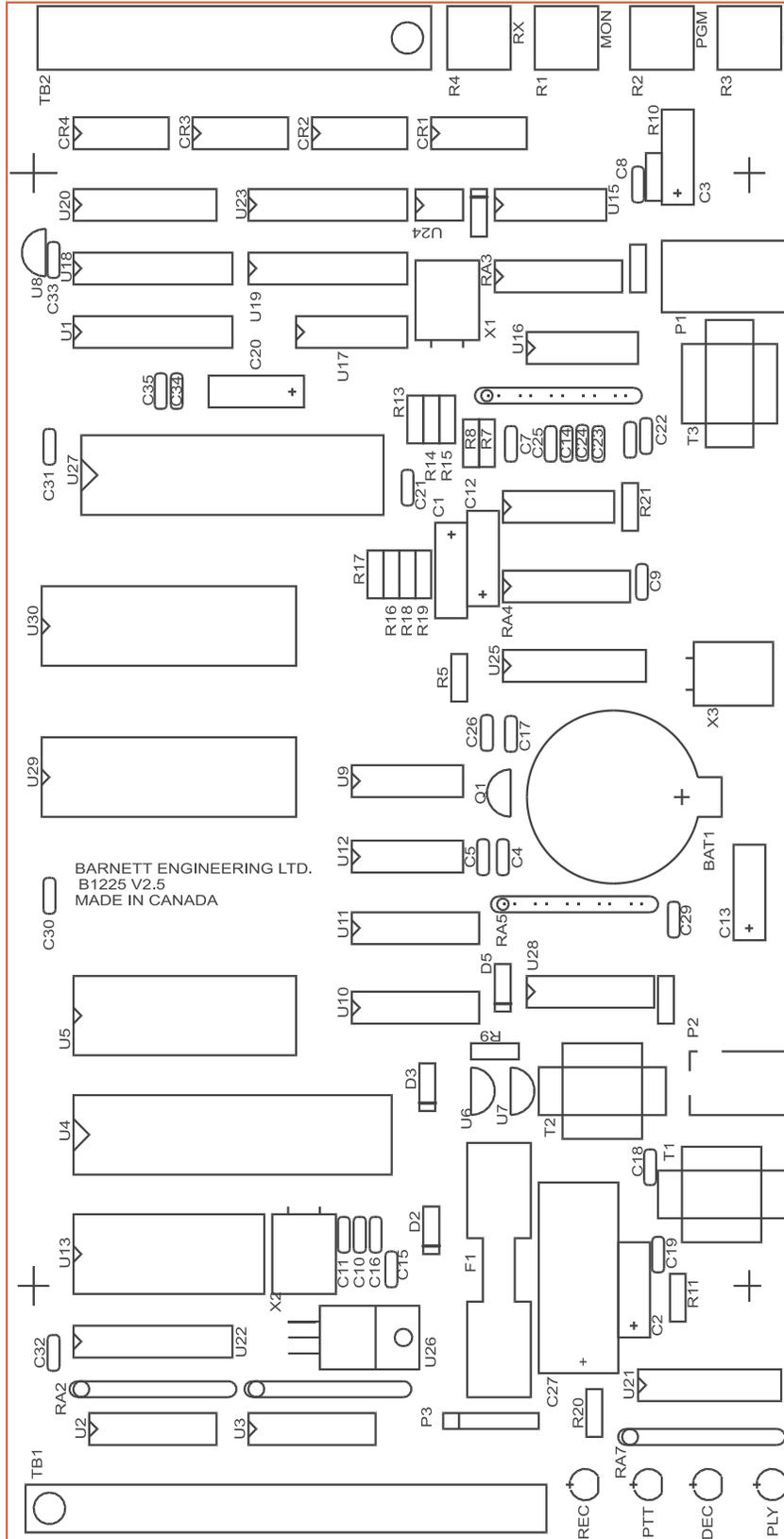
DEFAULT PARAMETERS



9 - RELAY FORMAT (0 = STANDARD, 1 = LATCHED, 2 = TIMED)

RELAY 1	0
RELAY 2	0
RELAY 3	0
RELAY 4	0
RELAY ON TIME(SECONDS)	No Default
10 -NUMBER OF EXPANDERS	0
11- ACK REQUEST (1 = OFF, 0 = ON)	0
12 - EXPANDER ID (0 = OFF, 1 = ON)	0

# 5 BOARD LAYOUT



## 6 WARRANTY

Barnett Engineering Ltd. warrants that all equipment supplied shall be free from defects in material or workmanship at the time of delivery. Such warranty shall extend from the time of delivery for a period of one year. Buyer must provide written notice to Barnett Engineering Ltd. within this prescribed warranty period of any defect. If the defect is not the result of improper usage, service, maintenance, or installation and equipment has not been otherwise damaged or modified after delivery, Barnett Engineering Ltd. shall either replace or repair the defective part or parts of equipment or replace the equipment or refund the purchase price at Barnett Engineering Ltd.'s option after return of such equipment by buyer to Barnett Engineering Ltd. Shipment to Barnett Engineering Ltd.'s facility shall be borne on account of buyer.

(1) Consequential Damages: Barnett Engineering Ltd. shall not be liable for any incidental or consequential damages incurred as a result of any defect in any equipment sold hereunder and Barnett Engineering Ltd.'s liability is specifically limited to its obligation described herein to repair or replace a defective part or parts covered by this warranty.

(2) Exclusive Warranty: The warranty set forth herein is the only warranty, oral or written, made by Barnett Engineering Ltd. and is in lieu of and replaces all other warranties, expressed or implied, including the warranty of merchantability and the warranty of fitness for particular purpose.

**WARNING: This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Sub-part J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.**