

## Chapter 34 ALARM UNITS & CABLES

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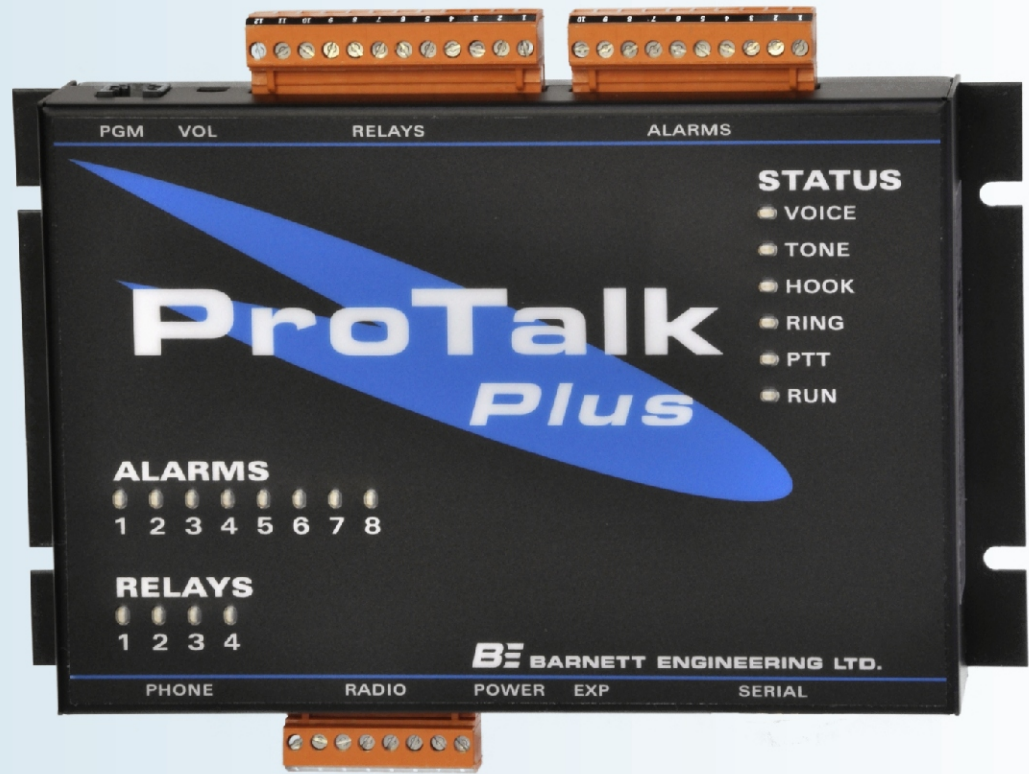
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- 34.1      **PROTALK PLUS ALARM UNIT B1290**
- 34.2      **EXPANDER UNIT FOR ALARM UNIT B1292**
- 34.3      **RW90 CABLES**
- 34.4      **RWU90 CABLES**
- 34.5      **TECK CABLES**

# ProTalk<sup>®</sup> *Plus* Alarm Reporting Unit



When you have access to a phone line or would like to make alarm announcements over a two way radio system the ProTalk Plus should be your first choice. With 8 Alarm inputs and 4 Relay control outputs, low temperature rating and rugged construction the Plus has been designed to ensure key personnel are informed whenever an alarm condition occurs.

Alarm messages are recorded in a toll quality voice and call out numbers can use any of the 4 directories. When an alarm occurs the Plus either key's up the radio or goes off hook and places a call to the first person in the list. When answered the Plus speaks its users recorded message and waits for an acknowledge code. If no acknowledge code is received the Plus goes to next phone number in the directory and continues till it receives an acknowledge code which stops the call out process. Additionally operators can call in to the Plus to interrogate its status, control any of the relay outputs or make programming changes.

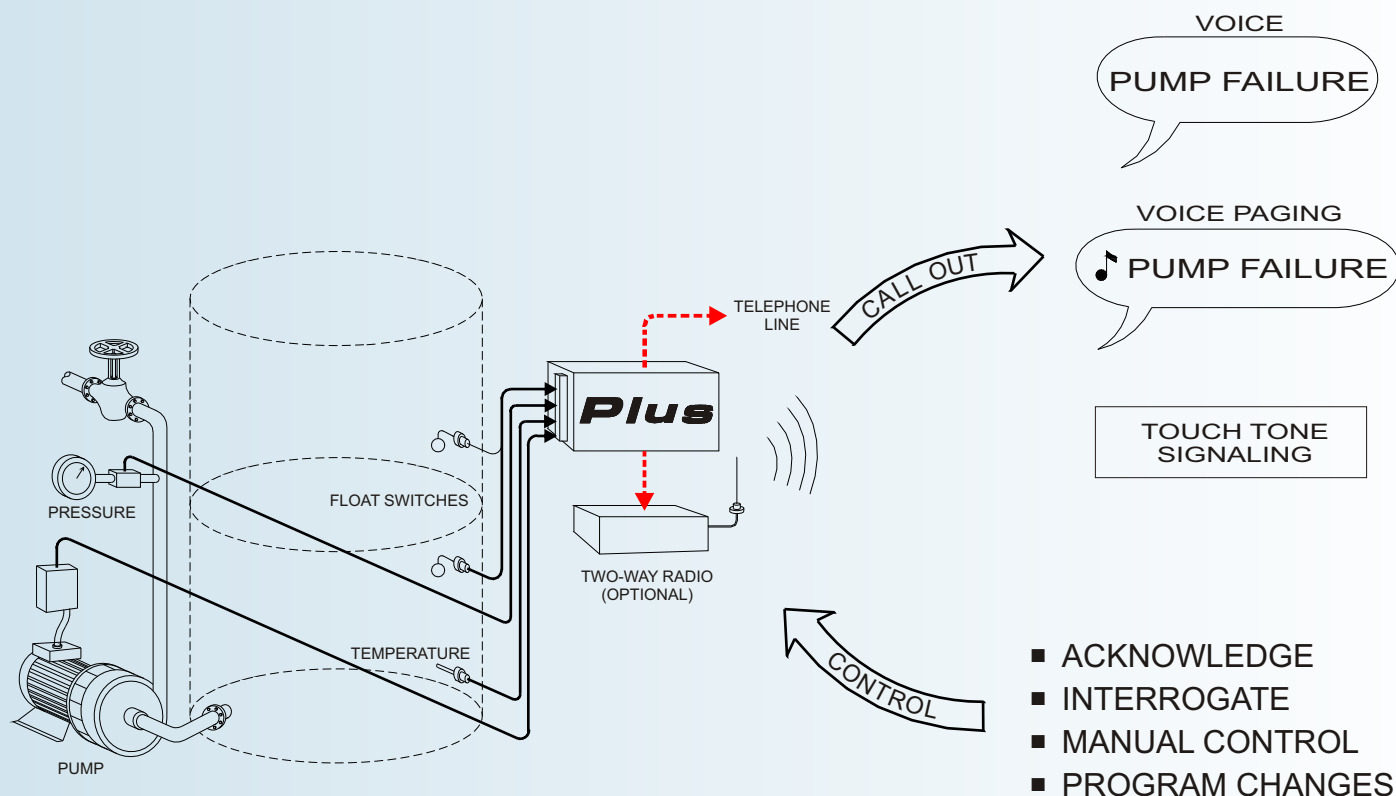
Available accessories for the Plus include the Option 004 Battery Back-up Power Supply, Option 005 Telephone Line Transient Protector and the B1292 Expander, which provides an additional 8 alarm inputs and 4 relay outputs. Up to 7 B1292 Expanders can be used in one ProTalk Plus system.

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# ProTalk<sup>®</sup> *Plus* Alarm Reporting Unit



## Key Features

- Reliable and flexible alarm monitoring
- Telephone line callout
- Two-way radio interface for alarm announcements on private radio systems (including paging) or PA systems
- 8 alarm inputs
- 4 control outputs
- Data logging of system events
- Field upgradable firmware
- CSA approved
- -40°C to +60°C temperature range

# ProTalk<sup>®</sup> *Plus* Alarm Reporting Unit

## Specifications

<b>Physical</b>	8.2" wide x 6.5" high x 2" deep Steel, powder coated matte black Mounting ears for panel installation
<b>Environment</b>	-40°C to + 60°C, 95% humidity, non-condensing
<b>Connectors</b>	Plug-in screw terminal block unless noted
<b>Power</b>	+10 to +30 VDC, negative ground, 50 mA standby, 150 mA maximum current, 10 mA per active relay  A DC power source can be connected to the terminal block or a B1256 AC adapter can be connected the 2mm barrel jack
<b>Alarm Inputs (8)</b>	Optically isolated, 2 mA to operate, ground closure required
<b>Relay Outputs (4)</b>	Independant Form C outputs controlled by programmable codes or used as special function outputs. Rated: 1A at 30 Volts DC, 0.3A at 120 Volts AC
<b>Radio Port</b>	TX audio: 600 ohms, single ended, capacitor coupled - adjustable between 0 dBm and -20 dBm RX audio: 10K ohms, single ended, capacitor coupled - adjustable between 0 dBm and -20 dBm  PTT output: Open collector, 25 VDC maximum, 150 mA maximum COS (channel busy) input: Ground closure, 1mA to operate
<b>Telephone Port</b>	RJ11 connector, tone or pulse dial
<b>Program Ports</b>	Telset: RJ11 connector, internal telset bias from the primary power supply - operates with standard touch-tone telephones  USB: USB type B connector Ground closure, 1 mA to operate
<b>Acknowledge Input</b>	Digitized, toll quality, 64 kbps
<b>Voice Quality</b>	
<b>Indicators</b>	Alarms (8) - Red LED Outputs (4) - Red LED Status - Green LED Run Tone Voice Ring Hook PTT
<b>Speaker</b>	Internal, 100 mW, manual level adjust with externally accessible potentiometer
<b>Expander Port</b>	2.5mm jack for connection to B1292 expander modules - up to 7 expanders can be used

# ProTalk<sup>®</sup> *Plus* Alarm Reporting Unit

## Programmable Features

<b>Voice Messages</b>	Site Name, Alarm Names and Relay Names are user recorded, non-volatile. Can be recorded directly into the Plus unit or by using the PC Voice Editor.
<b>Alarm Format</b>	Selectable as Normally Open or Normally Closed. Can be either latching or momentary.
<b>Alarm Format</b>	Selects the delay time before a change at an input is recognized. Programmable from .1 to 19.9 in seconds or minutes.
<b>Interval Timer</b>	This 2 stage timer uses 'A' interval 'A' times before switching to the 'B' interval. The 'A' interval is adjustable between 1 and 249 minutes. The 'B' interval is adjustable between 0 and 249 minutes. (0 selects Auto Acknowledge)
<b>Call Progress</b>	When enabled, dial tone must be detected before dialing and voice activity before speaking.
<b>Rings Before Answer</b>	1 to 8 rings or never.
<b>Access Code</b>	Restricts remote access to only authorized users, 1 to 8 DTMF digits.
<b>Acknowledge Code</b>	Stops the alarm reporting cycle when received, 1 to 8 DTMF digits.
<b>Interrogate Code</b>	Forces annunciation of all active alarms, 1 to 8 DTMF digits.
<b>Directory Control Code</b>	Changes the directory that the alarms use for call out, 1 to 8 DTMF digits.
<b>Alarm On/Off Codes</b>	Sent when an alarm is active (on) or idle (off), separate on/off codes for each alarm.
<b>Ack Voice Disable</b>	Removes the request for an Ack code after alarm announcement. Useful for paging or PA systems.
<b>Relay Format</b>	Relays can be programmed as On/Off, Timed or Special Function Special functions are: new alarm, any alarm, acknowledge receipt or system error.
<b>Relay Control Codes</b>	When received, turns the relay On or Off, separate codes for each relay.
<b>Relay On Time</b>	Selects the On interval for a timed relay, programmable from 1 to 199 in seconds or minutes.
<b>Relay Voices</b>	Selects whether the state of enabled relays is spoken or not.
<b>Alarm Reporting</b>	Radio or telephone reporting is configurable to occur anywhere in the call out sequence.
<b>Directory Format</b>	4 selectable directories hold alarm reporting sequences. Inputs can be individually assigned to any directory.
<b>Telephone Numbers</b>	Up to 16 call out numbers in each of the 4 directories; each directory can hold 200 digits.
<b>Radio Port</b>	TX and RX level settings, PTT warmup interval, COS operation.
<b>Radio Signaling</b>	DTMF, 2 tone paging, five tone paging and single tones can be transmitted.
<b>Remote Input Codes</b>	When received, simulate an alarm activation, separate codes for each alarm; 1 to 8 DTMF digits.
<b>Number of Expanders</b>	Selects the number of attached B1292 expander modules, selectable from 0 to 7.
<b>Event Logging</b>	Alarm reporting events are automatically logged and can be retrieved by the PC application. A precision Real Time Clock is used to timestamp the events.
<b>Voice Editor</b>	This utility can be used to create and edit message files containing the user programmed phrases spoken by the unit. Phrases extracted from a message file or from a wave file can be used.
<b>Update Firmware</b>	Firmware upgrades and option activation can be done using this utility. Upgrade files are sent to the unit and the internal flash memory is updated. Options in the unit can be activated with the supplied option code.
<b>Text Names</b>	A text name can be assigned to the site, alarms and relays, up to 16 characters in length. These names are used for identification during event logging. The Voice Editor can import names from the program database.

# **ProTalk<sup>®</sup>** ***Plus***

## **Installation & Operation Manual**

December 2013  
Rev. 2.03

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## 1. INTRODUCTION

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This manual is for use with both Version 1 and Version 2 of the ProTalk Plus.

Additional features available on the version 2 model are:

- USB serial port – replaces the RS232 port
- Event Logging including a high stability real time clock
- Field reprogrammable firmware upgrades

### Basic Operation

The ProTalk Plus model B1290 is a device used to monitor alarms at an unattended site. If an alarm occurs, such as building intrusion, power failure, high or low temperature or equipment failure, the B1290 automatically dials out on the telephone line. When the telephone is answered, the B1290 announces, in a clear voice, the name of the site and the alarm condition that has occurred. If there is no answer, the B1290 will continue to dial through a list of telephone numbers until it reaches someone and is able to report its alarm.

This manual describes the basic operation of the ProTalk Plus model B1290, and its most common applications. The B1290 can, however, be programmed to perform many more functions at the discretion of the user. It can announce alarms over radio, telephone, a public address system or any combination thereof. It can also be programmed to send coded tones along with the voice messages to activate such devices as radio pagers, relays or annunciator panels. It can be used as a master station to concentrate alarms from a number of remote sites. It can be commanded to perform remote control functions by receiving codes from a tone telephone. Expanders can be added to increase the capacity of the unit from the basic 8 alarm inputs and 4 relay outputs up to 64 alarm inputs and 32 relay outputs.

The B1290 can be completely customized for your application as all of the operating parameters are programmable by the user, including the voice messages. The B1290 can be programmed using a standard tone telephone. Stored voices in the B1290 prompt you step-by-step when you are entering new voice messages or codes, and speak back all the values that you have saved.

Using the PC software, it is also possible to program the B1290 from a computer. All of the information in the B1290 can be read, written and stored. This manual concentrates on handset programming; refer to the Help files in the PC programming application when using it to configure the B1290.

If event logging is used with the Version 2 model, the log reports can be read from the B1290 and saved to file.

The programming sections of this manual describe how the B1290 is configured with a phone set. Instructions for programming with the software application are found in the Help section of the program.

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## **2. HOW TO USE THIS MANUAL**

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This manual is organized in such a way that, if you want the B1290 to function with its default settings as a simple telephone dialer, you only need to read the first two chapters of the manual covering the physical installation, basic programming and operation. If you wish to change some of the default settings or have the B1290 perform more advanced functions, continue on to the next chapter where the Program Codes are described in detail. Several step-by-step examples of programming the B1290 into different configurations are provided. The final chapter describes some of the problems most commonly experienced when the B1290 is first installed, and gives advice on troubleshooting.

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### 3. GETTING STARTED

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#### Description

The B1290 is housed in a metal case with plug-in terminal blocks and jacks for field wiring. Table 1 and Figure 1 show the connection points to the B1290. Figure 3 shows how wiring connections are made to the unit.

**Table 1 ProTalk Wiring Connections**

#### RADIO

- 1 Radio TX
- 2 Radio RX
- 3 PTT Output
- 4 COS Input
- 5 Ground
- 6 ACK Input
- 7 Ground
- 8 +11.5 to +28 power (Version 1)  
+10 to +30V power (Version 2)

#### RELAYS

- 1 Relay 1 NC
- 2 Relay 1 Common
- 3 Relay 1 NO
- 4 Relay 2 NC
- 5 Relay 2 Common
- 6 Relay 2 NO
- 7 Relay 3 NC
- 8 Relay 3 Common
- 9 Relay 3 NO
- 10 Relay 4 NC
- 11 Relay 4 Common
- 12 Relay 4 NO

#### SERIAL – RS232 (Ver.1)

- 2 RXD
- 3 TXD
- 4 DTR
- 5 GND
- 6 DSR

#### ALARMS

- 1 Alarm 1 Input
- 2 Alarm 2 Input
- 3 Alarm 3 Input
- 4 Alarm 4 Input
- 5 Alarm 5 Input
- 6 Alarm 6 Input
- 7 Alarm 7 Input
- 8 Alarm 8 Input
- 9 Ground
- 10 Ground

#### POWER

2.1mm power, centre ground

#### PHONE

RJ11 Line 1

#### PGM

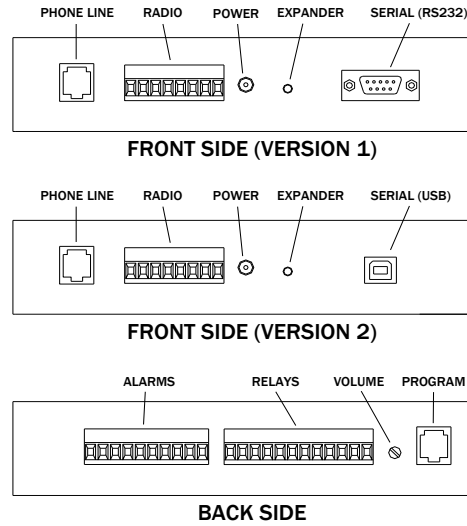
RJ11 Line 1

#### EXP

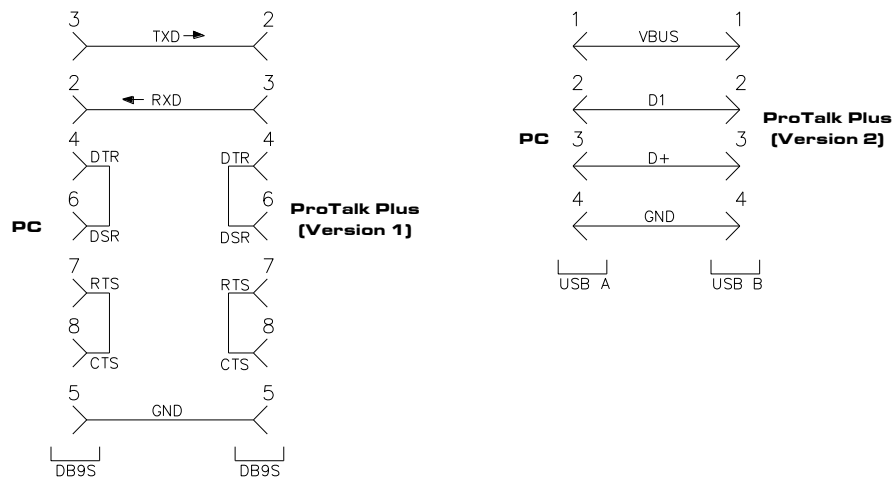
2.1 mm mono, centre data

#### SERIAL – USB (Ver.2)

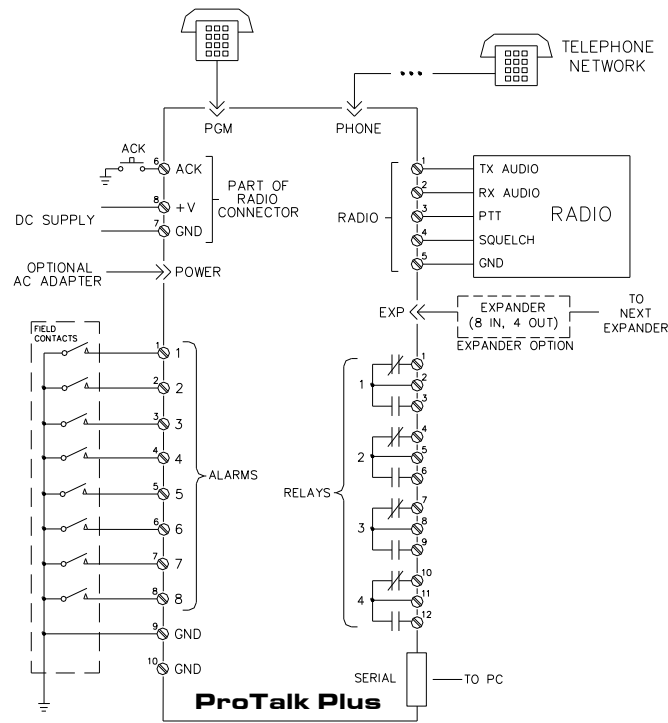
- 1 VBus
- 2 D1
- 3 D+
- 4 GND



**Figure 1 Connector Locations**



**Figure 2 Programming Cable Wiring**



**Figure 3 ProTalk Plus Wiring Diagram**

## Power Requirements

The B1290 will operate from a supply of +11.5 VDC to +28 VDC (Version 1) *or* +10 VDC to +30VDC (Version 2). The typical current requirement is 100 mA plus 10 mA per relay. Each expander uses an additional 60 mA plus 10 mA per active relay.

Connect power only to one of the two available inputs: the DC inputs on the Radio terminal block or the plug used with an AC adapter. The power supply used should be a safety approved Class 2 power supply source, current limited using a 2A in line slow blow fuse.

## Installation

The B1290 should be installed in a clean, dry place suitable for electronic equipment. The unit will operate from -40°C to +60°C.

*Caution: Power and the telephone line should not be connected until the rest of the installation is complete.*

Use a flat blade screwdriver to make connections to the screw terminals on the sides of the enclosure.

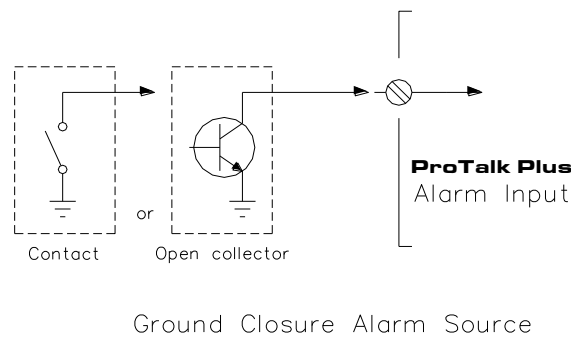
## Alarms

In its default condition, the B1290 looks for a normally open (NO) contact which closes to ground to indicate an alarm. The B1290 may also be programmed to accept inputs normally closed (NC) to ground which open on an alarm condition. To change this parameter, refer to the alarm format in I/O Configuration - Program Code 5. Ensure that all unused alarm points are either disabled or connected to ground when using NC contacts. Refer to Figure 4 for details on how to connect an alarm signal line.

All of the alarm inputs are optically isolated and are operated from the B1290's internal 12 volt supply.

Connect the alarm inputs to the positions labeled 1 through 8 on the ALARM terminal block.

*Caution: DO NOT connect a voltage source to the alarm inputs.*



**Figure 4 Alarm Input Connection**

## Relays

Four form C relay outputs are available, rated for 1.0 A at 30 VDC, or 0.3 A at 120 VAC. Connect external devices to the contacts on the RELAY connector. When connecting to larger loads, connect an interposing relay between the B1290 and the load.

## Radio

If the alarms are to be announced over a radio, connect TX to the transmit audio of the radio, and RX to the receive audio. *RX should always be connected to squelched audio.* Independent transmit level adjustments are available for voice, DTMF and tone signals. Adjust the levels of the transmit audio signals using the programming phone or the software setup. For the receive level adjustment, set the programmed level to match the level of the incoming signal: for a -10 dBm received signal from the radio the programmed value would be -10 dBm. The range of adjustment for both receive and transmit signals is -20 dBm to 0 dBm.

The PTT output provides a ground closure through an open collector to signal the radio to transmit. Connect this point to the radio's push-to-talk circuit. The maximum rating is 150 mA, 25V.

The COS input is used to indicate to the B1290 whether the radio channel is busy. Connect this point to the output of the radio's carrier-operated switch or relay (COS or COR). In its default condition, the B1290 looks for a high signal to indicate the channel is clear and a low signal when the channel is busy. The B1290 may also be programmed to recognize the reverse polarity. To change this parameter, refer to the squelch polarity in System Settings - Program Code 6. This input is internally pulled up to work with open collector radio outputs. In its default program condition, the input is pulled high when clear and driven low when busy.

## Local Acknowledge

This input is used to acknowledge an alarm locally at the B1290 without having to call in over the radio or telephone. Connect the ACK input to a normally open contact which will be grounded to acknowledge the alarm.

## Telephone

The telephone line is connected to the RJ11 jack labeled PHONE on the side of the B1290. The line should be using the inner (red/green) pair. Audio levels to the telephone line are fixed internally in conformance with FCC regulations.

The telephone should always be the last item connected.

*Caution: DO NOT plug the telephone line into the PGM jack, as damage could result to the B1290.*

## Expanders

Expanders are used to increase alarm and relay capacity of the B1290. They come in their own metal cases with all connectors clearly labeled. Expanders must be located in close proximity to the master B1290 unit for them to communicate properly. The new B1290 Version 2, when paired with the B1292 expander, can yield a maximum

distance of 100ft. All other combinations of past units (B1290 Version 1 and/or B1290E) are limited to a 14ft maximum distance. Shielded cables are provided to connect between the units and are cut to accommodate the maximum allowable distance of previous versions. Custom cables lengths are required for any other distances. Substituting cables is not recommended.

The alarm and relay connections on the expander are the same for the B1290 connections. Use the shielded cable provided to connect between the EXP connector on the B1290 and EXP on the expander. On subsequent expanders, use the cable supplied with the expander to connect between EXP on one expanders and EXP on the next.

Next set the rotary switch on the expander to configure its ID number. (*refer to the B1292 manual for more information*)

If the expander address is changed, the unit must have power removed and then reapplied in order for the master to recognize its new address. All the expander's programmed parameters, including the voice messages, are stored in the main ProTalk Plus and are downloaded on power-up.

The expander database will be automatically transferred from the ProTalk Plus if an expander address is changed or an expander is replaced.

The expander requires its own +12/+24 VDC and GND connections. Be sure that all units, master and expander(s), are always powered up and down together. Do not connect or disconnect expander cables when the system is powered up.

The PWR LED lights when the power is on. The expander also has an RX LED which lights when it is being polled by the master B1290, and a TX LED which indicates when it is responding.

## Power-up Sequence

Once the installation is complete, DC power can be connected to the B1290. On start-up, the B1290 will go through a self-test sequence; ending with the firmware version being spoken over the speaker and the RUN LED staying on solid.

The telephone line may then be plugged in as the last connection. *Ensure that the telephone is connected into the PHONE port on the B1290.*

## Start-up Programming – Version 1 Only\*

*\*for Version 2 information, see tutorials on the programming disc included with this unit or visit our website at [www.barnett-engg.com/support](http://www.barnett-engg.com/support).*

### Introduction

Now you are ready to begin programming. When the B1290 is initially powered up, it will prompt you to input three parameters which must be entered before it can operate — the voice messages, a list of telephone numbers and the Acknowledge Code. Once these values have been entered, with its default settings, the unit will function as a telephone dialer when an alarm is present. If you require the B1290 to perform more advanced functions, continue on to the chapter where the Program Codes are explained in detail.

Before you start programming, there are a few points with which you must be familiar. First, although it is possible to program the B1290 remotely by calling it up over the telephone line, it is assumed that when you initially install the unit you will be using a local programming phone. The B1290 must be programmed with a phone which sends DTMF tones (Touch Tone); it will not recognize the signals from a phone which sends dial pulses.

The B1290 is designed to be user friendly. When you listen in the earpiece of the programming phone, you will hear spoken messages. These are called voice “prompts”, and they tell you what information the B1290 is expecting you to enter. Whenever you program a new value, the B1290 will immediately speak that parameter back to you, so you will know right away whether the code was entered correctly. You can change a parameter as many times as you like before going on to the next one. If you make a mistake, such as entering a value outside the range for that parameter, the B1290 will immediately let you know by announcing *Error*. And if you get confused, just hang up the phone and start again. The B1290 will start again at the beginning when you pick up the handset.

The other feature you need to know is how to enter data. If you were entering information from a keyboard or other terminal, you would use the “Enter” key or a “Carriage Return”. A telephone does not have this key, so we substitute the code **[\*][\*]** for “Enter”. The two “stars” (asterisks) must be entered one after the other, with no more



than one second between the beginning of the first digit and the beginning of the second. This is a much longer time than most people think, and there is no need to rush when entering the code. If you enter the digits too fast, the telephone will only recognize one **[\*]**. You may get an *Error* message if this happens or else the B1290 will ignore the entry and wait for another **[\*]**. The **[\*]** code is used throughout the programming sequence to enter information or proceed to the next step. With practice you will soon determine the correct speed.

Where the **[#]** digit is used in a DTMF code or a telephone number it must be entered as two # digits. For example, the DTMF code **[#][2][#]** would be entered as **[#][#][2][#][#]**.

The B1290 will not work correctly until all three of the required parameters have been entered, so if you hang up in the middle of this procedure, the B1290 will take you back to the beginning of the sequence the next time you come off hook.

Throughout the programming sequence, the unit will speak stored parameters using a prompt, followed by the word "is", then the stored data. For example, to tell you the Acknowledge Code is set to 1234, the B1290 says *Acknowledge Code is 1234*. Input from the telephone's keypad is expected following this message. Whenever voice messages are required, the unit will beep twice, prompting the user to speak into the telephone handset.

### Site ID and Voice Alarm Messages

Plug any standard tone telephone into the jack labeled "PGM".

Lift the handset to your ear. You will hear the B1290 speak the words *Program voice; site is* followed by silence since there is no voice message programmed.

B1290: "Program Voice"

B1290: "Site is..."

The B1290 is prompting you to enter the name of the site. The name you program will be announced at the start of every message along with the list of alarms. To record the voice message, enter the record code (**[2]**).

YOU: **[2][\*][\*]**

After you hit the second star, the B1290 will prompt you with a beep-beep tone.

B1290: "beep-beep"

As soon as you hear the tone, you can begin to record your message. The VOICE LED on the front panel will light while the B1290 is recording. Speak the name of the site, e.g. Ajax Compressor Station. The B1290 detects when you stop speaking and automatically plays back the message. The VOICE LED will light while it is playing back. *Do not hit any keys when you are finished recording your message; pauses between words may cause the recording to terminate.*

YOU: "Ajax Compressor Station"

B1290: "Site is Ajax Compressor Station"

Did the message played back sound acceptable? If you think it could be improved, enter the record code (**[2]**) followed by **[\*]** again and repeat the message as many times as you like. Once you are satisfied with the way the message sounds, hit the enter code (**[\*]**).

YOU: **[\*][\*]** Next

The B1290 will prompt you for the next entry.

B1290: "Alarm One is..."

Repeat the above steps to record the alarm message, e.g. power failure.

YOU: **[2][\*][\*]**

B1290: "beep-beep"

YOU: "Power Failure"

B1290: "Alarm One is Power Failure."

Repeat the above steps until you are satisfied with the way the message sounds.

YOU: [\*]\* Next

B1290: "Alarm Two is... "

Enter the voice message associated with the second alarm point, e.g. intrusion alarm.

YOU: [2][\*][\*]

B1290: "beep-beep"

YOU: "Intrusion Alarm"

B1290: "Alarm Two is Intrusion Alarm"

YOU: [\*]\* Next

B1290: "Alarm Three is... "

Repeat the above steps until all the alarm points have been programmed. When you have entered all the voices, enter Quit ([#][\*][\*]) at the announcement of the next empty alarm. If you use all eight alarms, the B1290 will automatically advance after you enter the last voice message. The next step in the startup process is to program the telephone numbers.

YOU: [#][\*][\*] Quit

### Telephone Numbers

B1290: "Program Directory"

B1290: "Directory A, Line One, is Radio Alert Voice" (default)

The B1290 has just spoken the actions that will occur from the commands on the first line in Directory A. The default radio announcement will now be replaced with a phone call-out command. Enter [2] to indicate you want to program the line with new commands.

YOU: [2][\*][\*] Change line

B1290: "beep"

Details on how directory commands are entered are shown in Program Code 2 Directories. The startup process described here provides only the basic auto-dialer configuration.

Enter the phone number using the pushbuttons on your telephone. The entry shown below will result in the B1290 dialing the selected number and then speaking the alarm messages. The [#][0] at the beginning is the DIAL command, followed by a [#][8] command for VOICE.

YOU: [#][0] [4][0][3][2][5][5][9][5][4][4] [#][8] [\*][\*]

B1290: "Directory A, Line One is DIAL 4032559544 VOICE."

If there is an error in the entry, hit the program code [2] followed by [\*][\*] and try again. If the sequence is played back correctly, hit the enter code.

YOU: [\*][\*] Next

B1290: "Directory A, Line Two is empty"

The B1290 is prompting you for the second directory line. The commands entered for line 2 are what will occur if there is no acknowledgement after the first line commands are completed during operation.

YOU: [2][\*][\*] Change line

B1290: "beep"

YOU: [#][0] [4][0][3][2][5][5][2][3][4][3] [#][8] [\*][\*]

B1290: "Directory A, Line Two is DIAL 4032552343 VOICE."

YOU: [\*][\*] Next

B1290: "Directory A, Line Three is empty."

The B1290 is prompting you for a third telephone number to dial if it cannot get an acknowledgement from the first two. Continue entering telephone numbers up to a maximum of twenty. If you are not using twenty numbers, enter the Quit code (**#**) at the prompt. If you hit the Enter code (**\*(\*)**) for an empty telephone number, the B1290 assumes that you have no more telephone numbers to enter and will jump to the next function.

YOU: **\*(\*)**      *Next*

*or*

YOU: **#\*\***      *Quit*

### Acknowledge Code

B1290: "Program Acknowledge Code."

B1290: "Acknowledge Code is 1234."

The B1290 is prompting you to enter an acknowledge code. This is the code you send to the B1290 when it calls you to announce an alarm, to acknowledge that you have received the message, otherwise the unit will keep on dialing. 1234 is the default code. You may use this code or enter a different one from 1 to 8 digits in length. It should be something easy to remember.

YOU: **2468\*\***

B1290: "Acknowledge Code is 2468."

YOU: **\*(\*)**      *Next*

B1290: "Enter Program Code"

The B1290 is prompting you to enter a Program Code if you need to program more advanced functions into the unit. If you require them, proceed to the chapter where Program Codes are explained in detail. Otherwise, hang up the programming phone.

At this point the B1290 will function as an alarm reporting unit over the telephone, dialing through the numbers you have programmed into Directory A until it is answered, then announcing the voice messages you have recorded to report an alarm.

These parameters will be stored indefinitely and you will not be prompted to enter them again.

The next time you lift the programming phone off hook, the B1290 will announce its status and prompt you to *Enter Control Code*. DO NOT enter any codes from the telephone. WAIT five seconds; the B1290 will time out and automatically enter the programming mode. When you hear the prompt *Program Access; Enter Program Code*, you may begin programming.

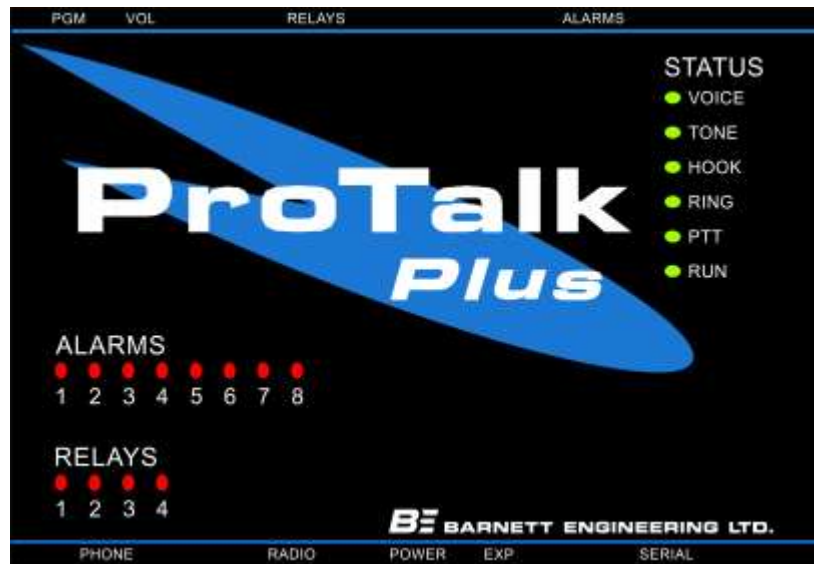
***Do not remove power from the B1290 while you are programming. Always put the telephone handset back on-hook before removing power.***

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## 4. FRONT PANEL

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The front panel of the B1290 is shown in Figure 5. The description of the front panel indicators will assist you in verifying the correct operation of the unit.



**Figure 5 ProTalk Plus Front Panel**

### Alarm LEDs

The Alarm LEDs light when the associated alarm input is in the alarm state. Unacknowledged alarms will be flashing and any that have been acknowledged will be on solid.

### Relay LEDs

The Relay LEDs light whenever the associated relay is on.

### Voice

The Voice LED is on whenever the B1290 is recording or playing user messages. It flashes when vocabulary messages are being played or when there is an error in the user voices.

### Tone

The Tone LED is on for the duration of a transmitted DTMF digit or other generated tone. It will also be on when call progress tones are detected on the phone line. It will flash once for each received or transmitted DTMF digit.

### Hook

The Hook LED comes on whenever the B1290 goes off hook, to dial or answer the telephone. It will flash if a phone port error is detected (no dial tone or other expected call progress signal). The hook LED will also flash during pulse dialing.

### Run

Version 1: The Run LED will be on steady when the B1290 is operating correctly; it will flash if an error condition is present.

Version 2: The Run LED will flash when the B1290 is operating correctly.

**Ring**

When ringing is detected on the telephone line, the Ring LED illuminates. Since answering the telephone is a low priority task to the B1290, it may ignore the ringing if it is processing other tasks (e.g. speaking on the radio).

**PTT**

The PTT LED will light when the B1290 generates a push-to-talk signal to the radio.

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## 5. OPERATION

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This chapter gives a detailed description of exactly how the B1290 will operate after the start-up programming has been completed. Parameters which may be altered are pointed out, with reference to the appropriate Program Code section.

### Alarm Sequence

When the B1290 receives an alarm on one of its inputs, it goes off hook and listens for dial tone. If dial tone is not present, the B1290 will hang up and try again. After three unsuccessful attempts to detect dial tone, the B1290 will conclude there is a problem with the line and stop dialing. When this occurs the unit will report *Telephone Access Error* over the radio, set the error relay and flash the RUN and HOOK LEDs.

If dial tone is detected, the B1290 dials the first telephone number stored in Directory A using tone dialing. When the telephone line is answered, the B1290 will announce its Site ID, the list of any alarms present, and prompt the user to *Enter Acknowledge Code*. It will repeat this message a minimum of three times, pausing five seconds after each announcement to wait for an acknowledgment. When the Acknowledge Code is detected, the B1290 will announce *Alarms Acknowledged* and then prompt "Enter Control Code".

If the line is busy, if there is no answer, or if the B1290 does not receive the Acknowledge Code after announcing the alarm, it will hang up the telephone line, then go off hook again and dial the next number in the directory. If the B1290 dials all the way through the directory without being acknowledged, it will wait two minutes (Interval Timer A), then start dialing again from the top of the directory. After three tries (Times A) at two minute intervals, the B1290 will retry the list every ten minutes (Interval Timer B) thereafter, not stopping until it is acknowledged.

All of the timers and intervals mentioned above are adjustable. In addition, the B1290 may be programmed to announce the alarm a number of times over radio, or a public address system, as well as dialing on the telephone.

### Acknowledging an Alarm

When the B1290 calls you on the telephone, it may take up to five seconds before it starts speaking. After it announces the alarms, it prompts you to *Enter Acknowledge Code*. You have five seconds to begin entering the digits.

If the B1290 has been programmed to operate its relays (Program Code 3, DTMF Codes), you may send a relay code over the telephone before acknowledging the alarms. The B1290 will actuate the relay, speak the associated voice message, and then prompt you again to *Enter Acknowledge Code*.

After the B1290 has detected the Acknowledge Code, it will speak the phrase *Alarms Acknowledged* and return to the "Enter Control Code" prompt. If no activity occurs for 5 seconds it will hang up.

Appending the # digit at the end of the Acknowledge code allows you to acknowledge the alarm for sixty minutes only. After one hour, the B1290 will check the alarm inputs again, and if the same alarm is still present, it will begin the reporting cycle just as if it was a new alarm.

Any series of digits entered immediately after the acknowledge code will be echoed back to the user. This feature is sometimes used in systems applications.

To acknowledge the B1290 locally, activate the local acknowledge switch connected to the unit (see the section on "Installation - Local Acknowledge"). The alarms may be acknowledged at any time. The *Alarms Acknowledged* announcement will occur whenever the B1290 is available to speak.

### Telephoning the B1290

When you call the B1290 on the telephone, it will answer after four rings (Rings before Answer) and announce its site ID, any alarms which are present, and the status of any relays which have been assigned codes. After this announcement, the B1290 will prompt you to *Enter Control Code*. The B1290 then waits ten seconds for you to enter a code. This could be a code to operate one of the relays, an Acknowledge Code, an Interrogate Code, or an Access Code which would allow you to go into the programming mode. If an Access Code (password) has not been programmed, the B1290 will automatically go into the programming mode after five seconds, prompting you to

*Enter Program Code.* You may then program the B1290 from your telephone, the same as you would from a local programming phone.

The B1290 will hang up whenever it has waited for more than ten seconds without receiving a DTMF code.

## Changing Telephone Directories

Telephone directories can be changed remotely without entering the programming mode. The directory can be changed by entering the Directory Control Code over the telephone system, local programming telephone, or two-way radio.

Refer to the Directory section, Program Code 2, for a description of the directory format and its uses.

This example uses the local programming phone to change the telephone format from DIRECTORY A to DIRECTORY B and then to DIRECTORY C. A typical installation may use a programming telephone mounted permanently at the site to make this procedure as simple as possible.

B1290: "Enter Control Code"  
YOU: 000  
B1290: "Telephone Format is Directory B"  
YOU: 000  
B1290: "Telephone Format is Directory C"

It is also common to enter this code using a DTMF keypad over the radio system when the operators at the site change shift.

The B1290 will not allow an empty directory to be selected.

## Error Messages

The B1290 will speak error messages when it is called on the phone line, interrogated over the radio port or when the local program phone is used.

### Hardware Error

The B1290 speaks *Alert - Site Error* when either the user voices or the vocabulary memory space is corrupt.

### Database Error

The B1290 speaks *Alert - Program Error* when either the configuration database is corrupt.

### Phone Error

The B1290 speaks *Alert - Telephone Access Error* when there has been a call progress error, such as no dial tone, during a phone call.

### Expander Error

The B1290 speaks *Alert - Expander Error* when a communication error is experienced with an expander.





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## 6. PROGRAM SUMMARY

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The codes used in the main programming menu are given as a summary below.

1**	Voices (page 16)
2**	Directories (page 17)
3**	DTMF Codes (page 20)
4**	Timer Configuration (page 21)
5**	I/O Configuration (page 22)
6**	System Settings (page 25)
7**	Expanders (page 26)
8**	Reset Database (page 27)
9**	Audio Levels (page 27)

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## 7. PROGRAM CODES

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### How to Enter the Programming Mode

To begin programming, you must hear the prompt *Enter Program Code* from the B1290. One way to get to this prompt was discussed in the chapter on **Getting Started**. After you have entered the initial voice messages, telephone numbers and an Acknowledge Code, the B1290 will prompt you to begin programming. A local programming phone may be used at any time to alter parameters. It is also possible to program the B1290 remotely by calling into it over the telephone line.

If you call a B1290 over the phone once it has been programmed, it will answer after four rings (default) and announce its site ID, any alarms present, the status of the relays (if they have been programmed) and any error status messages. Then it will prompt you to *Enter Control Code*. If the unit has been programmed to operate with a password, you must enter the Access Code at this time. The B1290 will reply with *Program Access* and prompt you to *Enter Program Code*. If an Access Code has not been programmed, the B1290 will time out after five seconds and automatically enter the programming mode. You will hear the prompt *Program Access; Enter Program Code*.

When you connect a local programming phone, the B1290 goes through a similar sequence. It will announce its site ID, any alarms present, the status of any programmed relays and any error status messages. Then it will prompt you to *Enter Control Code*. It is not necessary to know the Access Code to program from the local phone. Wait five seconds, and the B1290 will automatically prompt you with *Program Access; Enter Program Code*.

*IMPORTANT: Remember that all programming codes must be followed by the “[\*][\*]” code to enter them.*

The following chapter, **Programming Reference**, divides the programming parameters into functional blocks. Refer to that chapter to determine the parameter changes required for a specific function.

Appendix C is a **Programming Tree** for the B1290. It gives an overview of the parameters which may be programmed and how they are organized. The Program Codes are explained in detail in the next section.

### 1[\*][\*] Voices

When you enter Program Code 1, you will hear the following prompt:

B1290: "Enter Voice Code"

YOU: 1[\*][\*] *Record Site ID and alarm messages*  
2[\*][\*] *Record relay messages*  
3[\*][\*] *Erase all messages*  
[\*][\*] *Exit to Enter Program Code prompt*

### Record Site ID and Alarm Messages

Record the voice messages associated with the unit (site ID) and each individual alarm point. These are the messages which will be announced over the radio or telephone whenever the alarm is present.

B1290: "Site is Ajax Compressor Station"

YOU: 2[\*][\*] *Record*  
#[\*][\*] *Quit*  
[\*][\*] *Enter/Next*

Default: empty

If the message is OK, continue by hitting Enter. If you would like to record a new message, enter 2[\*][\*] to record. As soon as you hit the second asterisk of the Enter code, the B1290 will beep, prompting you to record a voice message. When you stop speaking, the B1290 will detect your silence and immediately play back the message that you recorded. Pauses between words may cause the recording to terminate. Do NOT enter [\*][\*] during the recording as the tones will disrupt normal callout operation. Repeat as many times as you need until the voice

message sounds acceptable. Then hit Enter [\*]\* to proceed, or [#][\*][\*] to return to the Enter Voice Code prompt. Entering Next advances to the alarm message section and the first alarm message will be spoken

B1290: "Alarm One is ..."

YOU: [2][\*][\*] *Record*

[#][\*][\*] *Quit*

[\*][\*] *Enter/Next*

If you enter messages for all eight alarms, the B1290 will automatically exit to the Enter Voice Code prompt.

Default: empty

## Record Relay Messages

Record the voice messages associated with each relay. Note that the messages will only be announced if the relays have been programmed to operate from a string (see Program Code 3, Relay On/Off Codes). When a relay is operated, the B1290 will speak the voice message followed by the word "On" or "Off" to verify that the action was taken.

In some applications, it is not necessary to have voice confirmation when a relay is operated. To disable this feature, refer to Program Code 6 - Relay Voices.

The B1290 will always announce the condition of the relays when it is called up or interrogated for status.

B1290: "Relay One is ... "

YOU: [2][\*][\*] *Record*

YOU: [#][\*][\*] *Quit*

[\*][\*] *Enter/Next*

Default: empty

## Erase All Messages

B1290: "Enter Voice Empty Code"

YOU: [#][3][1][\*][\*] *Erase (exit with any other entry)*

B1290: "Voice is Empty"

YOU: [\*][\*] *Enter/Next*

## [2][\*][\*] Directories

There are four directories in the B1290. To allow different alarms to perform different actions when they are active, each alarm can be selected to use any one of the directories. Each directory defines a unique sequence of actions. There is also a Directory Control Code that modifies the directory selection that the alarms are programmed for. When this code is used there are restrictions placed on how the alarms are assigned to directories. There are three possible ways that the directories can be used.

### 1. If there is No Directory Control Code:

Alarms can be assigned to any of the four directories and will always use the one that has been assigned.

### 2. If there is a Directory Control Code (method 1):

Alarms can only be assigned to Directory A. When the Directory Control Code is received, the directory usage is modified such that the alarms now use the next directory with commands in it. If Directory B has commands, then it will be used. When the Directory Control Code is received again, directory usage advances to the next directory with commands in it.

If all four directories have commands in them, then the Directory Control Code will simply advance to the next directory each time it is received. If the current setting is Directory D when the code is received, then it will return to Directory A.

If the next directory is unused, it will be skipped.

3. If there is a Directory Control Code (method 2):

If the alarms are assigned only to Directory A and Directory C, when the Directory Control Code is received, all of the alarms that are assigned to Directory A will switch to use Directory B and all of the Alarms assigned to Directory C will switch to use Directory D. When the Directory Control Code is received again, directories A and C will become the active directories.

Alarms cannot be assigned to Directory B or Directory D when this mode of operation is selected.

The directory structure is made up of a list of lines with each line containing a sequence of instructions. The B1290 performs the actions defined in each line then waits for a response. If the expected response is not received, the actions in the next line are carried out

Commands are placed into the directory line-by- line with a series of digits representing the required actions.

Commands that can be used in the directory and the digits used to select them are:

- #0 Dial + digits
- #1 Radio
- #2 Wait + 1-3 digits (seconds)
- #3 Alert
- #4 Two Tone Paging + (4 or 5 digits) + \* + (4 or 5 digits)  
(frequencies in .1 Hz. ie: 12345 would be 1234.5 Hz)
- #5 Five Tone Paging + 5 digits (5 digit cap code)  
or Five Tone Paging + 1digit + \* + 5 digits (preamble+ cap code)
- #6 Single tone + (4 or 5 digits), frequency in .1 Hz. ie: 12345 would be 1234.5 Hz
- #7 DTMF + 1-16 digits
- #8 Voice
- #9 Answer

When Program Code 2 is selected, the B1290 responds with the prompt:

B1290: "Enter Directory"

- YOU:    1\* \*    *Directory A*
- 2\* \*    *Directory B*
- 3\* \*    *Directory C*
- 4\* \*    *Directory D*
- 0\* \*    *Help (speaks a summary of commands)*
- #\* \*    *Quit*

If one of the directories is selected, a typical response would be:

B1290: "Directory A, Line One is DIAL 4032559544 WAIT 3 SEC VOICE"

This is the command sequence in the first line of the directory and would result in the B1290 dialing the number 2559544, waiting for 3 seconds and then speaking the voice messages. At this time the following options are available:

- 2\* \*    *Change this line*
- 3\* \*    *Delete this line*
- 4\* \*    *Insert a new line before the current line*

**#\*\*** *Quit*

**\*\*** *Next*

### Change This Line

To change the line, a complete sequence of commands and values must be entered. For example, if the setting was to be changed so that the wait time was 5 seconds instead of 3, the entry would be:

*YOU:* **2\*\*** *Change this line*

B1290: "beep"

*YOU:* **#0 4032559544 #25 #8 \*\***

B1290: "Directory A, Line One is DIAL 4032559544 WAIT 5 SEC VOICE"

This is the same command as [DIAL]4032559544 [WAIT]5 [VOICE] for this line in the PC programming software.

For an invalid entry, the B1290 will speak the word "Error" at the end.

### Delete This Line

Deleting a line will automatically alter the line numbers of any subsequent commands. If there are no lines in use following the deletion, the B1290 will simply read empty. If there are commands in the lines following deletion, the numerical value of the subsequent lines will shift up in sequence: commands from line 3 will move to line 2 (line deleted), commands from line 4 will move to line 3,...

*YOU:* **3\*\*** *Delete this line*

B1290: "empty" *If the next line in the directory is empty*

or

B1290: "Directory A, Line One is DIAL 4032559544 DTMF 1234 VOICE" *Contents of the next line*

You can either accept this entry or edit the line.

### Insert A New Line

Inserting a line will automatically alter the line numbers of any subsequent commands. If there are previously programmed commands in the subsequent lines to the line inserted, the numerical value of the lines will shift down in sequence: commands from line 2 (line inserted) will move to line 3, commands from line 3 will move to line 4,...

*YOU:* **4\*\*** *Insert a new line*

B1290: "beep"

*YOU:* **#0 4032559544 #8 \*\*** *(new entry)*

B1290: "Directory A, Line One is DIAL 4032559544 VOICE"

### Next

The Next option allows you to advance to the next line in the directory

*YOU:* **\*\*** *Next*

### Quit

The Quit option returns the B1290 to the Enter Directory Code prompt.

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

Limits: Each phone number may contain up to 39 digits.

Default: Directory A has the single command to turn on the radio and speak the voice messages; the other three

directories are empty.

If a pause is required when dialing, use the Wait command to insert a delay interval followed by a DTMF command with more digits. This feature is most often used when communicating with devices which require special signaling, such as paging terminals. The #, or pound digit, has no special meaning and is dialed as a pound.

When calling a paging terminal or someone who cannot acknowledge the call from their phone, it may be useful to wait before starting the next telephone call. This allows the called party to get to a phone and call the B1290 to acknowledge it before it calls out again. To do this, put a Wait command with the required delay on the next directory line and then a Dial command on the following line.

To send a group call with 2 Tone Paging, set tone A equal to tone B.

Do not use the Answer command immediately following a Dial command in the directories when Call Progress is enabled. This is the equivalent of two Answer commands and may result in unreliable operation.

## **3[\*]\* DTMF Codes**

The B1290 is capable of decoding, storing, and transmitting all DTMF codes, including codes received from a 4x4 keypad. Enter **#[\*]\*** to clear a DTMF Code.

B1290: "Enter DTMF Code"

YOU: **1[\*]\***      *Acknowledge Code*  
**2[\*]\***      *Access Code*  
**3[\*]\***      *Relay On/Off Codes*  
**4[\*]\***      *Alarm On/Off Codes*  
**5[\*]\***      *Remote Alarm Input Codes*  
**6[\*]\***      *Interrogate Code*  
**7[\*]\***      *Directory Control Code*  
**\*[\*]**      *Exit to Enter Program Code prompt*

### **Acknowledge Code**

The Acknowledge Code is sent by the called party to indicate that the alarm message has been received. This stops the calling sequence of the B1290.

B1290: "Acknowledge Code is ... "

YOU: **X[\*]\***      ( *x = 1 to 8 DTMF digits* )

Default: 1234

### **Access Code**

The Access Code is used as a password to prevent unauthorized callers from altering the programming of the B1290. If an Access Code has been programmed, it must be entered before a telephone caller will receive the *Enter Program Code* prompt. The Access Code is not required for local programming.

B1290: "Access Code is ... "

YOU: **X[\*]\***      ( *x = 1 to 8 DTMF digits, # = clear* )

Default: empty

### **Relay On/Off Input Codes**

The relay codes allow users to perform remote control functions at the unattended site. Callers can operate relays on the B1290 by sending DTMF codes from their telephone or radio keypads. Each relay has one code to turn it on and a separate code to turn it off. When a relay is operated, the B1290 speaks a voice message associated with that relay

followed by the word "On" or "Off" (see Program Code 1 - Record Relay Voices).

B1290: "Relay One On Code is ... "

"Off Code is ... "

YOU:    ( *x = 1 to 8 DTMF digits, # = clear* )

Default: empty

### Alarm On/Off Output Codes

These codes are used to control DTMF-operated devices at the receiving end when an alarm is reported. A typical example would be sending a message to a pager with a digital display. The DTMF On string is sent during the alarm announcement, preceding the voice announcement for that alarm. The DTMF Off string is sent only over the radio port when the alarm returns to normal, and is not accompanied by a voice message. This feature might be used to turn the lamps of an annunciator panel on or off depending on the condition of the alarm. In simple system applications, the alarm On/Off codes of one B1290 might be programmed to be the same as the relay On/Off codes or remote alarm input codes of another B1290.

B1290: "Alarm One On code is ... "

"Off code is ... "

YOU:    ( *x = 1 to 8 DTMF digits, # = clear* )

Default: empty

### Remote Alarm Input Codes

If a remote alarm input code has been programmed, when it is received by the B1290 it will be interpreted exactly the same as an alarm on that input. The most common application is to obtain an alarm report from a remote site via radio. The Alarm LED will show the status for remote alarms.

**Do not** connect an alarm signal line to an input that has been programmed with a remote alarm input code.

B1290: "Alarm One Remote Alarm Code is ... "

YOU:    ( *x = 1 to 8 DTMF digits, # = clear* )

Default: empty

### Interrogate Code

The Interrogate Code is used to find the current status of the B1290. When it receives the code, the unit reports its site ID, any alarms which are present, the status of any relays which have been programmed to operate and any error status messages. Only the voice messages are repeated; no signaling is sent. As the B1290 always announces its status when it is telephoned, this code is used primarily for querying over radio.

B1290: "Interrogate Code is ... "

YOU:    ( *x = 1 to 8 DTMF digits, # = clear* )

Default: 5678

### Directory Control Code

The Directory Control Code is used to call up the B1290 and change the way that the alarms are using the directories. When it receives the code, the directory usage is modified. If the Directory Control Code is used there are restrictions on what directories are available - refer to Program Code 2 Directories for details.

B1290: "Directory Control Code is ... "

YOU:    ( *x = 1 to 8 DTMF digits, # = clear* )

Default: 000

## **4[\*]\* Timer Configuration**

When you enter Program Code 4, the B1290 will automatically cycle through the following parameters. After the last one, "Times A", it will go back to the *Enter Program Code* prompt.

### **Rings Before Answering**

When the B1290 is dialed, this parameter sets the number of times it will let the telephone ring before it answers.

B1290: "Answer rings is ... "

YOU:  *no answer*

*number of rings ( x = 1 to 8 )*

*answer and automatically acknowledge after 8 rings*

Default: 4 (answer after 4 rings)

If the B1290 is on its own telephone line, it will normally be programmed to answer right away, after one or two rings. However, if the line is shared with other users, it should be programmed to answer after 6 to 8 rings, giving people lots of time to pick up the phone before the B1290 automatically answers.

The # is used when the called parties have dial pulse phones. They cannot acknowledge receipt of an alarm using a code. Instead the B1290 recognizes 8 rings on the telephone line as an Acknowledge Code. In the directory, a Wait command with the required delay, is placed on the line following the Dial command. This gives the called party time to hang up the phone, call the B1290 back and let the phone ring 8 times to acknowledge receipt of the alarm (refer to Program Code 2 - Phone Directory).

### **Interval Timer A**

If an alarm is not acknowledged after one pass through the directory, this timer determines how often the B1290 will repeat the reporting sequence.

B1290: "Timer A is 2 minutes"

YOU:  *minutes ( x = 1 to 249 )*

Default: 2 minutes

### **Interval Timer B**

After the Timer A cycle has completed, this timer determines how often the B1290 goes through its alarm reporting sequence.

B1290: "Timer B is 10 minutes"

YOU:  *automatically acknowledge after Interval A*

*minutes ( x = 1 to 249 )*

0 would be selected if the alarms were announced over a public address system, for example, where there is no way for the alarms to be acknowledged.

Default: 10 minutes

### **Cycles Through Timer A (Times A)**

This number determines how many times the B1290 will cycle through its alarm reporting sequence at A intervals before switching to B intervals. With its default settings, the B1290 will try 3 times at 2 minute intervals, then switch to reporting at 10 minute intervals. The switch to the B interval is primarily to conserve air time on busy radio systems.

B1290: "Times A is ..."



YOU:  times (  $x = 0$  to 8 )

Default: 3

## **I/O Configuration**

After you enter Program Code 5, the B1290 prompt for the Configuration Code. If you wish to go back to the *Enter Program Code* prompt without going through all of the codes, enter .

B1290: "Enter Configuration Code"

YOU:  Alarm Input Setup  
 Using Directory  
 Relay Setup  
 Exit to Enter Program Code prompt

### **Alarm Input Setup**

#### **Alarm Format**

This parameter changes the format of the B1290 alarm inputs to match the output of your monitoring devices in the field. Normally open inputs indicate an alarm when the input is grounded, and when the ground signal is removed, the alarm is interpreted as having cleared. Normally closed inputs are grounded in their normal state, and open when an alarm occurs. Latched inputs recognize a pulse as an alarm. After the pulse has disappeared, the input is deemed to be in the alarm condition until it is acknowledged.

*Note:* A latched alarm should provide a short, predictable pulse to the input of the ProTalk Plus; otherwise, it may have to be acknowledged twice. If the alarm is acknowledged while the input is active, the alarm will not be cleared and new alarms will not activate that input.

B1290: "Alarm Format is ..."

YOU:  Normally Open  
 Normally Closed  
 Normally Open, Latched  
 Normally Closed, Latched  
 Next

Default: 0 (normally open)

#### **Alarm Timer (Debounce) Timescale**

The debounce timers on the alarm inputs can operate with a resolution of .1 seconds or .1 minutes. When the B1290 speaks 'seconds' for this value it is indicating that the timer is counting in .1 second steps and when it speaks 'minutes' it is counting in .1 minute steps.

B1290: "Alarm Timer is seconds"

YOU:  Seconds  
 Minutes  
 Next

Default: 0 ( seconds)

#### **Alarm Delay (Debounce)**

This parameter controls the amount of time an alarm must be present before it actually registers as an alarm. This feature is often used to eliminate fleeting alarms, where the device in the field does not present a clean closure to indicate an alarm, but a series of bounces on the contacts. Another example might be to overcome momentary power fluctuations which cause false alarms to be reported. The debounce on each alarm may be individually set.

B1290: "Alarm One Delay is \_\_ point \_ seconds"

YOU:  (  $x = 0.1$  to 19.9 )

Exit

Next

The value must be entered in tenths of a second, from 1 to 3 digits. The last digit entered is interpreted as the least significant, i.e. tenths of a second.

Default: 0.5 seconds

### Using Directory

B1290: "Alarm One is Directory A"

YOU:  Off

Directory A

Directory B

Directory C

Directory D

Exit

Next

Default: 1 (Directory A)

The selected directory will determine which sequences of actions are performed when this alarm is active. Each alarm can use any directory. If the Directory Control Code is used there are restrictions on what directories should be used - refer to Program Code 2 Directories for details.

### Relay Setup

#### Relay Timer Timescale

The interval timers on the relay outputs can operate with a resolution of 1 second or 1 minute. When the B1290 speaks 'seconds' for this value it is indicating that the timer is counting in 1 second steps and when it speaks 'minutes' it is counting in 1 minute steps.

B1290: "Relay Timer is seconds"

YOU:  Seconds

Minutes

Next

Default: 0 (seconds)

#### Relay On Time

The B1290 has four relays that are turned On with the relay On codes and turned Off with the relay Off codes. The relay timer may be used to turn On a relay for a specified duration and then turn it Off automatically. The timer controls the period of time the relay is On. The interval is programmable from 1 to 199 seconds or from 1 to 199 minutes depending on the setting of the relay timescale. The timers for each relay are programmed separately and operate independently.

Setting the time to zero will make the relay an On/Off type of relay. Setting the timer with the # digit makes the relay operate as a 'special function' output. This function is only available on the main ProTalk Plus unit and not on the expanders. The special functions are:

Relay 1      Unacknowledged Alarm Present  
 Relay 2      Any Alarm Present  
 Relay 3      Alarm Acknowledge Received - pulsed when the unit is acknowledged.  
 Relay 4      Error

B1290:      "Relay One On Timer is \_\_ seconds"

YOU:      0\*\*      *Not timed, uses the Relay Off Code*

             X\*\*      *(x = 1 to 199 )*

             #\*\*      *(Special function )*

Default:      0 (On until turned Off)

## 6\*\* System Settings

When you enter Program Code 6, the B1290 will automatically cycle through the following parameters as you hit Enter (\*\*). When it has completed the whole list, it will return to the *Enter Program Code* prompt.

### Dial Format

This parameter determines the method of dialing telephone. Tone format dials using DTMF tones (Touch-Tone). Pulse format dials using pulses as a rotary phone would. This parameter is only programmable in Version 1. The choice of format is only available in Version 1.

#### Version 1

B1290: "Dial Format is ..."

YOU:      0\*\*      *Tone Dialing*

             1\*\*      *Pulse Dialing*

             #\*\*      *Exit*

             \*\*      *Next*

Default: 0 (tone dialing)

#### Version 2

B1290: "Dial Format is 0"

### Squelch Polarity

This setting changes the polarity of the signal used to indicate a busy radio channel.

B1290: "Squelch is ..."

YOU:      0\*\*      *Busy when the input is low*

             1\*\*      *Busy when the input is high*

             #\*\*      *Exit*

             \*\*      *Next*

Default: 0 (transmit on high)

### Relay Voices

This setting enables or disables the B1290's spoken response to a relay operation. If the B1290 is used in a control situation where monitoring the relay operation is not required, the B1290 would be programmed with the relay voices muted. The B1290 relay voices should be enabled where verification of a relay operation is required.

B1290: "Relay Voice is ... "

YOU:      0\*\*      *Relay voices are not used*

             1\*\*      *Relay voices are used*

#\* \* *Exit*

\* \* *Next*

Default: 1 (voices on)

### Acknowledge Request

This setting enables or disables the B1290's voice prompt *Enter Acknowledge Code*. If the alarm announcement is over a public address system, for example, acknowledgment is not possible. The B1290 would be programmed for automatic acknowledge (see Interval Timer B, Program Code 4) and the request for an Acknowledge Code would be disabled.

The B1290 will continue transmitting its alarms until it receives some form of acknowledgment, automatic or otherwise, even if it does not request one.

B1290: "Acknowledge Voice is ..."

YOU: 0\* \* *Acknowledge request is not used*

1\* \* *Acknowledge request is used*

#\* \* *Exit*

\* \* *Next*

Default: 1 (enabled)

### Call Progress (Dial Tone Enable)

This setting enables or disables the feature where the B1290 monitors the audio activity on the phone line when it places a call. If enabled, Call Progress will cause the B1290 to look for dial tone before dialing, watch for a busy signal on the called line and then wait until the called party speaks before the alarm announcement begins. Without Call Progress enabled, the B1290 will perform the dial-out operation and speak regardless of the signals encountered on the phone line.

Do not use the Answer command immediately following a Dial command in the directories when Call Progress is enabled. This is the equivalent of two Answer commands and may result in unreliable operation.

B1290: "Dial Tone is ..."

YOU: 0\* \* *Call Progress is not used*

1\* \* *Call Progress is used*

#\* \* *Exit*

\* \* *Next*

Default: 1 (enabled)

## 7\* \* Expanders

When Program Code 7 is entered, the B1290 gives you the following parameters.

### Number of Expanders

Increase the capacity of a basic B1290 by adding up to 7 expanders, each with an additional 8 alarm inputs and 4 relay outputs.

B1290: "Expander Number is . . ."

YOU: X\* \* *Expanders ( x = 0 to 7 )*

#\* \* *Exit*

\* \* *Next*

Default: 0

## Site Voice Enable

This setting enables or disables the announcement of a site ID from the expander unit. If the expander is being used to increase the number of alarms to be reported from a single site, you probably don't need to announce the site ID again. However, the site ID might be useful to differentiate between alarms from different areas or pieces of equipment.

B1290: "Expander Site Voice is . . . "  
YOU: 0\*\* Site voice is not used  
1\*\* Site voice is used  
\*\* Next

Default: 0 (expander site ID disabled)

To program the parameters within the expander, the PGM port on the B1290 is used. Programming is done exactly as though the main unit itself was being programmed, except that the expander number precedes the program code. Refer to Example 10 - Adding an Expander for a specific description of this procedure.

## 8\*\* Reset Database

This code is used to reset all of the programmed parameters (excluding voices) to their default values.

B1290: "Enter Empty Code"  
YOU: #31\*\* Clear Database  
\*\* Next

Any other entry will leave the database unchanged.

## 9\*\* Audio Levels

This code is used to adjust audio levels for specific signals. For receive levels the setting should correspond to the level of the signal that is coming from the attached equipment. Receive levels can be in the range between -20 dBm and 0 dBm. For transmit levels, the setting determines the amplitude of the signal that will be produced at the output of the B1290. Transmit levels can be set in the range between -20 dBm and 0 dBm. Only even numbers are valid. If an odd number is entered, it will be rounded down. The negative sign is automatically applied to any non-zero value.

The settings for the audio levels are presented in the following order for modification

B1290: "Radio Code One is . . . " (Radio Transmit Tone Level)  
YOU: XX\*\* Level setting ( x = 20 to 0 )  
#\*\* Exit  
\*\* Next

Default: 0

B1290: "Radio Code Two is . . . " (Radio Transmit DTMF Level)  
YOU: XX\*\* Level setting ( x = 20 to 0 )  
#\*\* Exit  
\*\* Next

Default: 0

B1290: "Radio Code Three is . . . " (Radio Transmit Voice Level)  
YOU: XX\*\* Level setting ( x = 20 to 0 )  
#\*\* Exit

☐\*☐\*      *Next*

Default: 0

B1290: "Radio Code Four is . . ." (Radio Receive Level)

*YOU:*    ☐X☐X☐\*☐\*    *Level setting ( x = 20 to 0 )*

☐#☐\*☐\*      *Exit*

☐\*☐\*      *Next*

Default: 0

B1290: "Telephone Code Five is . . ." (Telephone Receive Level)

*YOU:*    ☐X☐X☐\*☐\*    *Level setting ( x = 20 to 0 )*

☐#☐\*☐\*      *Exit*

☐\*☐\*      *Next*

Default: 0

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## 8. PROGRAMMING REFERENCE

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The ProTalk Plus is capable of performing many functions other than those set by its default values. If you require these extended capabilities, they are accessed through the program codes. If the default operation of the unit as described in the **Getting Started** chapter of this manual is sufficient, then you may ignore this section.

This chapter organizes the programming parameters by their functions. See the chapter on **Program Codes** for more detail on the use and meaning of the referenced parameters.

### 1. Alarm Announcement

This section identifies all of the parameters that determine WHAT is sent when an alarm occurs. By programming these parameters, you may send voice, signaling, and paging tones.

*Directory Used (Program Code 5.2)*

*Directories (Program Code 2)*

*Record Alarm Voices (Program Code 1.1)*

*Alarm On/Off Output Codes (Program Code 3.4)*

*Acknowledge Request (Program Code 6)*

*Speak Messages (Program Code 2)*

### 2. Alarm Operation

This section identifies all of the parameters that determine WHEN an alarm will be announced. By programming these parameters, you control when an alarm is recognized and announced by the ProTalk Plus.

*Alarm Format (Program Code 5.1)*

*Alarm Delay Timebase (Program Code 5.1)*

*Alarm Debounce (Program Code 5.1)*

*Interval Timer A (Program Code 4)*

*Interval Timer B (Program Code 4)*

*Cycles Through Timer A (Program Code 4)*

### 3. Operation Codes

These parameters control how the unit operates. When one of these codes is received, the B1290 performs the required function.

*Acknowledge Code (Program Code 3.1)*

*Access Code (Program Code 3.2)*

*Interrogate Code (Program Code 3.6)*

*Remote Alarm Input Code (Program Code 3.5)*

*Directory Control Code (Program Code 3.7)*

*Access Code (Program Code 3.2)*

### 4. Relay Control

The parameters required to control a relay are listed here. You may use any number of relays, but the ON/OFF input codes, voice message and relay ON time must be programmed for each relay used. The relay voice code enables or disables the voice confirmation for all relays.

*Relay ON/OFF Control Codes (Program Code 3.3)*

*Record Relay Voices (Program Code 1.2)*

*Relay Timer Timebase (Program Code 5.3)*

*Relay On Time (Program Code 5.3)*

*Relay Voice (Program Code 6)*

*Relay Special Functions (Program Code 5.3)*

## **5. Telephone Specific Parameters**

This section describes the parameters used when the unit is required to transmit alarms or signaling over the telephone system.

*Using Directory (Program Code 5.2)*

*Directory Telephone Numbers (Program Code 2)*

*Rings Before Answering (Program Code 4)*

*Dial Format (Program Code 6)*

## **6. Radio Specific Parameters**

These parameters control the operation of the unit when it is connected to a two-way radio. Refer to the installation section in Getting Started for the required connections to the radio.

*Directory Radio Command (Program Code 2)*

*Squelch Polarity (Program Code 6)*

*Radio Warmup (Program Code 2)*

## **7. Expander Attachment**

When an expander is added to the system, these parameters must be set. They configure the main B1290 unit to accept the expander. The parameters within the expander must also be programmed. Refer to the Advanced Programming Examples for an example of how this is done.

*Number of Expanders (Program Code 7)*

*Site Voice Enable (Program Code 7)*

## **8. Audio Levels**

*Audio Levels (Program Code 9)*



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## 9. PROGRAMMING EXAMPLES

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### Example 1: Reporting Alarms over Radio and Telephone

In this example, assume that your company has a mobile radio system which is monitored by field personnel. Radio operators have DTMF pads on their mics so they can acknowledge an alarm from the B1290. They would like to have the alarm reported over the radio system three times with a 2 minute interval between transmissions, then dialed out over the telephone if it is not acknowledged. If the alarm is not acknowledged, the B1290 should try again in ten minutes. After six tries at ten minute intervals, the B1290 should switch to trying once an hour. The COS on the radio used with the B1290 gives a high signal when the channel is busy.

B1290: Enter Program Code  
YOU: **[2][\*][\*]** *Directory Code*  
B1290: Enter Directory  
YOU: **[1][\*][\*]** *Directory A*  
B1290: Directory A, Line One is...  
YOU: **[2][\*][\*]** *Change*  
B1290: 'beep'  
YOU: **[#][1] [#][8] [\*][\*]** *[RADIO] [VOICE]*  
B1290: Directory A, Line One is RADIO VOICE  
YOU: **[\*][\*]** *Next*  
B1290: Directory A, Line Two is...  
YOU: **[2][\*][\*]** *Change*  
B1290: 'beep'  
YOU: **[#][2][1][2][0] [\*][\*]** *[WAIT]120 (seconds)*  
B1290: Directory A, Line Two is WAIT 120  
YOU: **[\*][\*]** *Next*  
B1290: Directory A, Line Three is...  
YOU: **[2][\*][\*]** *Change*  
B1290: 'beep'  
YOU: **[#][1] [#][8] [\*][\*]** *[RADIO] [VOICE]*  
B1290: Directory A, Line Three is RADIO VOICE  
YOU: **[\*][\*]** *Next*  
B1290: Directory A, Line Four is...  
YOU: **[2][\*][\*]** *Change*  
B1290: 'beep'  
YOU: **[#][2][1][2][0] [\*][\*]** *[WAIT]120 (seconds)*  
B1290: Directory A, Line Four is WAIT 120  
YOU: **[\*][\*]** *Next*  
B1290: Directory A, Line Five is...  
YOU: **[2][\*][\*]** *Change*  
B1290: 'beep'

YOU: [#1] [#8] [\*] [\*] [RADIO] [VOICE]  
 B1290: Directory A, Line Five is RADIO VOICE  
 YOU: [\*] [\*] Next  
 B1290: Directory A, Line Six is...  
 YOU: [2] [\*] [\*] Change  
 B1290: 'beep'  
 YOU: [#2] [1] [2] [0] [\*] [\*] [WAIT]120 (seconds)  
 B1290: Directory A, Line Six is WAIT 120  
 YOU: [\*] [\*] Next  
 B1290: Directory A, Line Seven is...  
 YOU: [2] [\*] [\*] Change  
 B1290: 'beep'  
 YOU: [#0] [4] [0] [3] [2] [5] [5] [9] [5] [4] [4] [#8] [\*] [\*]  
 [DIAL]4032559544 [VOICE]  
 B1290: Directory A, Line Seven is DIAL 4032559544 VOICE  
 YOU: [\*] [\*] Next  
 B1290: Directory A, Line Eight is...  
 YOU: [#] [\*] [\*] Quit  
 B1290: Enter Directory  
 YOU: [#] [\*] [\*] Quit  
 B1290: Enter Program Code  
 YOU: [4] [\*] [\*] Configuration  
 B1290: Answer Rings is 4  
 YOU: [\*] [\*] Next  
 B1290: Timer A is 2 minutes  
 YOU: [1] [0] [\*] [\*] Enter 10 minutes  
 B1290: Timer A is 10 minutes  
 YOU: [\*] [\*] Next  
 B1290: Timer B is 10 minutes  
 YOU: [6] [0] [\*] [\*] Enter 60 minutes  
 B1290: Timer B is 60 minutes  
 YOU: [\*] [\*] Next  
 B1290: Times A is 3  
 YOU: [6] [\*] [\*] Enter 6 times  
 B1290: Times A is 6  
 YOU: [\*] [\*] Next  
 B1290: Enter Program Code  
 YOU: [6] [\*] [\*] Select System Settings

B1290: Dial Format is 0  
 YOU: [\*]\* Next  
 B1290: Squelch is 0  
 YOU: [1][\*]\* Enter busy when high  
 B1290: Squelch is 1  
 YOU: [\*]\* Next  
 B1290: Relay Voice is On

At this point you are finished programming and may hang up the telephone. The directory is programmed with the voice message repeated three times on the radio and then once on the phone line. Another method of programming the radio announcement would be to have an alert tone followed by the message repeated twice. In this case the entry for each of the radio related commands would be:

B1290: Directory A, Line One is...  
 YOU: [#][1] [#][3] [#][8] [#][8] [\*]\* [RADIO][ALERT] [VOICE][VOICE]  
 B1290: Directory A, Line One is RADIO ALERT VOICE VOICE

Over the telephone, the message will be repeated only once.

If this programming is used, when the B1290 registers an alarm, the reporting cycle will be as follows:

Over radio: Alert tone  
 Ajax Compressor Station; Power Failure  
 Ajax Compressor Station; Power Failure  
 Enter Acknowledge Code  
 pause for 2 minutes

Alert tone  
 Ajax Compressor Station; Power Failure  
 Ajax Compressor Station; Power Failure  
 Enter Acknowledge Code  
 pause for 2 minutes

Alert tone  
 Ajax Compressor Station; Power Failure  
 Ajax Compressor Station; Power Failure  
 Enter Acknowledge Code  
 pause for 2 minutes

Over telephone: Dial 4032559544  
 Ajax Compressor Station; Power Failure  
 Enter Acknowledge Code  
 pause for 5 seconds -waiting for acknowledge code  
 Ajax Compressor Station; Power Failure  
 Enter Acknowledge Code  
 pause for 5 seconds -waiting for acknowledge code

This sequence repeats for 60 seconds.

If the Acknowledge Code is not received over the telephone, the B1290 will wait ten minutes and try the complete sequence again, starting with the radio cycle. If no Acknowledge Code is received after six tries at ten minute intervals, the B1290 will switch to reporting every hour until the alarm is acknowledged.

## Example 2: Dialing from Two Different Telephone Directories

In this example, the B1290 is programmed to telephone whoever is on call if there is an alarm. The company has two groups of employees who take turns being on call. Instead of reprogramming the B1290 directory every week,

two directories are programmed. When the Directory Control Code is received, the B1290 is directed to dial from the other directory. The directory may be switched with the Directory Control Code over the telephone, local programming phone, or two-way radio. There are specific rules governing how the alarms can be assigned to directories if the Directory Change Code is used. Refer to Program Code 2 Directories for more information concerning these rules. This example starts by setting the telephone numbers in the two directories.

B1290: Enter Program Code  
 YOU: **[2][\*][\*]** *Directory Code*  
 B1290: Enter Directory  
 YOU: **[1][\*][\*]** *Directory A*  
 B1290: Directory A, Line One is...  
 YOU: **[2][\*][\*]** *Change*  
 B1290: 'beep'  
 YOU: **[#][0][4][0][3][2][5][5][9][5][4][4][#][8][\*][\*]**  
*[DIAL]4032559544 [VOICE]*  
 B1290: Directory A, Line One is DIAL 4032559544 VOICE  
 YOU: **[\*][\*]** *Next*  
 B1290: Directory A, Line Two is...  
 YOU: **[2][\*][\*]** *Change*  
 B1290: 'beep'  
 YOU: **[#][0][4][0][3][2][5][5][9][5][9][8][#][8][\*][\*]**  
*[DIAL]4032559598 [VOICE]*  
 B1290: Directory A, Line Two is DIAL 4032559598 VOICE  
 YOU: **[\*][\*]** *Next*  
 B1290: Directory A, Line Three is...  
 YOU: **[#][\*][\*]** *Quit*  
 B1290: Enter Directory  
 YOU: **[2][\*][\*]** *Select Directory B*  
 B1290: Directory B, Line One is...  
 YOU: **[2][\*][\*]** *Change*  
 B1290: 'beep'  
 YOU: **[#][0][4][0][3][7][6][6][4][4][2][2][#][8][\*][\*]**  
*[DIAL]4032554437 [VOICE]*  
 B1290: Directory B, Line One is DIAL 4032554437 VOICE  
 YOU: **[\*][\*]** *Next*  
 B1290: Directory B, Line Two is...  
 YOU: **[2][\*][\*]** *Change*  
 B1290: 'beep'  
 YOU: **[#][0][4][0][3][2][5][5][9][5][4][5][#][8][\*][\*]**  
*[DIAL]4032559545 [VOICE]*  
 B1290: Directory B, Line Two is DIAL 4032559545 VOICE

YOU:       [\*][\*]   *Next*

B1290:      Directory B, Line Three is...

YOU:       [#][\*][\*]   *Quit*

B1290:      Enter Directory

YOU:       [#][\*][\*]   *Quit*

The telephone numbers have now been programmed. Now enter the Directory Control Code

B1290:      Enter Program Code

YOU:       [3][\*][\*]   *DTMF Codes*

B1290:      Enter DTMF Code

YOU:       [7][\*][\*]   *Directory Control Code*

B1290:      Directory Control Code is...

YOU:       [7][8][\*][\*]   *Enter Control Code*

B1290:      Directory Control Code is 78

YOU:       [\*][\*]   *Next*

B1290:      Enter Program Code

Right now the B1290 is programmed with dialing commands in Directory A and Directory B. Any alarms that are to be switched between these two directories should be programmed to use Directory A or the control code will have no effect. Each alarm has its own setting for the directory it is using. Make sure that the alarms you want to have changed are set properly.

YOU:       [5][\*][\*]   *Select Configuration*

B1290:      Enter Configuration Code

YOU:       [2][\*][\*]   *Select Using Directory*

B1290:      Alarm One is Directory is...

YOU:       [1][\*][\*]   *Select Directory A*

B1290:      Alarm One is Directory is A

YOU:       [\*][\*]   *Next*

Repeat this for all of the alarms

When you wish to dial from the B directory, call up the B1290 and follow these steps:

B1290:      Enter Control Code

YOU:       [7][8]   *Directory Control Code*

B1290:      Telephone Format is Directory B

And to change it back:

B1290:      Enter Control Code

YOU:       [7][8]   *Directory Control Code*

B1290:      Telephone Format is Directory A

### Example 3: Different Alarms Dialing Different Telephone Numbers

A B1290 is used in an application where there are two different types of related alarms. Some are building alarms, such as intrusion alarms, building temperature, power failure, etc. Others are alarms relating to specific equipment failures, such as compressor failure, high tank level or sump overflow. It is desirable to have the maintenance

personnel alerted if there is a building alarm, but if there is a problem with the equipment, it would be preferable to alert the operations technicians.

In this example, alarms 1 and 2 are connected to intrusion alarm and building high temperature respectively. These are building alarms, and are to dial the building maintenance people at 403-255-9544 and then 403-255-9598. Compressor failure and high tank level are fed to alarms 3 and 4. Since these are equipment problems, operations technicians at 403-255-4437 and then 403-255-9545 are to be alerted. Follow the previous example to enter the telephone numbers in Directory A and Directory B then set the alarms to use these two directories.

B1290: Enter Program Code  
YOU: **5****\*****\*** *Select I/O Configuration*  
B1290: Enter Configuration Code  
YOU: **2****\*****\*** *Select Using Directory*  
B1290: Alarm One is Directory...  
YOU: **1****\*****\*** *Select Directory A*  
B1290: Alarm One is Directory A  
YOU: **\*****\*** *Next*  
B1290: Alarm Two is Directory...  
YOU: **1****\*****\*** *Select Directory A*  
B1290: Alarm Two is Directory A  
YOU: **\*****\*** *Next*  
B1290: Alarm Three is Directory A  
YOU: **2****\*****\*** *Select Directory B*  
B1290: Alarm Three is Directory B  
B1290: Alarm Four is Directory A  
YOU: **2****\*****\*** *Select Directory B*  
B1290: Alarm Four is Directory B  
YOU: **#****\*****\*** *Quit*

The B1290 is now programmed to dial Directory A when alarms 1 or 2 occur, and Directory B when alarms 3 or 4 occur.

#### Example 4: Actuating Relays

In this example, when you receive the alarm “High Pressure” from the B1290, you would like to be able to operate a bypass valve for up to ten minutes. The valve can be controlled by one of the relays on the B1290 using Relay On and Relay Off codes.

B1290: Enter Program Code  
YOU: **1****\*****\*** *Select Voices*  
B1290: Enter Voice Code  
YOU: **2****\*****\*** *Select Relay Voices*  
B1290: Relay One is...  
YOU: **2****\*****\*** *Change*  
B1290: beep-beep  
YOU: *Bypass Valve*

B1290: Relay One is Bypass Valve  
 YOU: [\*]\* Next  
 B1290: Relay Two is...  
 YOU: [#]\*]\* Quit  
 B1290: Enter Voice Code  
 YOU: [#]\*]\* Quit  
 B1290: Enter Program Code  
 YOU: [3]\*]\* Select DTMF Codes  
 B1290: Enter DTMF Code  
 YOU: [3]\*]\* Select Relay On and Off Codes  
 B1290: Relay One On Code is empty  
 YOU: [5][5][5]\* (pause) [\*]\* Enter On code  
 B1290: Relay One On Code is 555\*  
 YOU: [\*]\* Next  
 B1290: Relay One Off Code is empty  
 YOU: [5][5][5]\* [\*]\* Enter Off code  
 B1290: Relay One Off code is 555#  
 YOU: [\*]\* Next  
 B1290: Relay Two On Code is empty  
 YOU: [\*]\* Next  
 B1290: Relay Two Off Code is empty  
 And so on until all of the Relay Codes are done...  
 B1290: Enter DTMF Code  
 YOU: [\*]\* Next  
 B1290: Enter Program Code  
 YOU: [5]\*]\* I/O Configuration  
 B1290: Enter Configuration Code  
 YOU: [3]\*]\* Next  
 B1290: Relay Timer is seconds  
 YOU: [1]\*]\* Select minutes for the timebase  
 B1290: Relay Timer is minutes  
 YOU: [\*]\* Next  
 B1290: Relay One On Timer is 00 minutes  
 YOU: [1][0]\*]\* Select 10 minutes for the time  
 B1290: Relay One On is 10 minutes  
 YOU: [\*]\* Next  
 B1290: Relay Two On timer is 00 minutes

At this time you are finished programming and can hang up the phone. When the B 1290 calls you with an alarm, the sequence will be as follows:

B1290: Ajax Compressor Station; High Pressure.  
Enter Acknowledge Code

YOU: **555\*** *Send the Relay On Code*  
Ajax Compressor Station;  
Bypass Valve On (and Alarm - Enter Acknowledge Code).

YOU: **1234** *Send the Acknowledge Code*

B1290: Ajax Compressor Station;  
Alarms Acknowledged

### Example 5: Operating a Radio Pager

In this example, when an alarm is received you want to contact the person on call, who is carrying a two-tone radio pager which operates on the company's private radio system. If the person does not call back to acknowledge the alarm, you want the B1290 to start dialing telephone numbers.

B1290: Enter Program Code

YOU: **2\*\*** *Directory Code*

B1290: Enter Directory

YOU: **1\*\*** *Directory A*

B1290: Directory A, Line One is...

YOU: **2\*\*** *Change*

B1290: 'beep'

YOU: **#1 #4 08555\*14334 #8 \*\***  
*[RADIO][2TONE]855.5/1433.4 [VOICE]*

B1290: Directory A, Line One is RADIO 2 TONE 855.5 Hz 1433.4 Hz VOICE

YOU: **\*\*** *Next*

B1290: Directory A, Line Two is...

YOU: **2\*\*** *Change*

B1290: 'beep'

YOU: **#0 4032559544 #8 \*\***

B1290: Directory A, Line Two is DIAL 4032559544 VOICE

YOU: **\*\*** *Next*

B1290: Directory A, Line Three...

You are finished programming and may hang up the phone.

### Example 6: Dialing a Paging Terminal

In this example, rather than using a private radio system, the company's employees utilize a city-wide paging service. Normally when you dial the paging terminal, you are prompted to enter your own telephone number. Your number is then displayed on the digital read-out of the pager, so the paged party knows what number to call back. We are going to program the B1290 to call this paging terminal when it reports an alarm.

B1290: Enter Program Code



YOU:        2[\*]\* Directories

B1290:      Enter Directory

YOU:        1[\*]\* Directory A

B1290:      Directory A, Line One is...

YOU:        2[\*]\* Change

B1290:      'beep'

YOU:        [#0 4032559544 #24 #7734 \*\*]  
               [DIAL]4032559544 [WAIT]4 [DTMF]734

B1290:      Directory A Line One is DIAL 4032559544 WAIT 4 seconds DTMF 734

YOU:        [\*]\* Next

You are finished programming and may hang up the phone.

When an alarm occurs, the B1290 will dial the number of the paging terminal, 255-9544; wait for the terminal to answer, wait 4 seconds while the terminal is prompting, then send the DTMF string 734 which represents the calling site. Any alarm will result in the paging message 734.

If you want to distinguish between one alarm and another, use the Alarm On Codes that can be assigned to each input.

B1290:      Enter Program Code

YOU:        3[\*]\* DTMF Codes

B1290:      Enter DTMF Code

YOU:        4[\*]\* Select Alarm On/Off Codes

B1290:      Alarm One On Code is...

YOU:        [\*1\*] (pause) [\*]\* Code for alarm 1

B1290:      Alarm One On Code is \*1\*

YOU:        [\*]\* Next

B1290:      Alarm One Off Code is...

YOU:        [\*]\* Next

B1290:      Alarm Two On Code is...

YOU:        [\*2\*] (pause) [\*]\* Code for alarm 2

B1290:      Alarm Two On Code is \*2\*

YOU:        [\*]\* Next

With this Alarm ON code programmed, the DTMF string \*734\* will be sent immediately preceding the alarm one message when alarm one is active. The message displayed on the pager will be: 734\*1\*

The string \*2\* will be sent with alarm two.

In this example, the same result could have been achieved by sending 734 as part of the alarm ON DTMF code. The 734 is included as part of the telephone number and is sent with every alarm. It appears much like a site identifier.

This example also assumes that the pager could be dialed directly. Sometimes a separate number for the pager must be dialed after the number for the paging terminal. In that case, you might need to insert another delay, and there might not be room to include the site identifier as part of the telephone number.

Another way the B1290 could be programmed to dial a paging terminal would be to make the alarm On DTMF code the same as the telephone number of the B1290. The telephone number would then be displayed on the pager, and the called party would receive the alarm message when he called the B1290 back. The B1290 would have to be programmed to wait some time for an acknowledgment before it continued dialing.

### Example 7: Announcing Alarms over a Public Address System

In this example, the B1290 is used to announce alarms from an unattended location over a building's public address system. You want the alarms to be announced twice, repeated again one minute later then repeated for the last time one minute after this. To make the process stop after the third repetition, program Timer B to zero. A zero value in Timer B means that the alarm is automatically acknowledged after A Times.

Connect the radio port, TX Audio and PTT, from the B1290 to the PA inputs.

Starting with the timer setup:

B1290: Enter Program Code  
YOU: **4\*\***  
B1290: Answer Rings is 4 (No effect on operation)  
YOU: **\*\*** Next  
B1290: Timer A is 2 minutes  
YOU: **1\*\*** Change the timer to 1 minute  
B1290: Timer A is 1 minutes  
YOU: **\*\*** Next  
B1290: Timer B is 10 minutes  
YOU: **0\*\*** Change the timer to zero  
B1290: Timer B is 0 minutes  
YOU: **\*\*** Next  
B1290: Times A is 3  
YOU: **2\*\*** Change the times A to 2  
B1290: Times A is 2  
YOU: **\*\*** Next

The timers are now set, now put the commands into the directory.

B1290: Enter Program Code  
YOU: **2\*\*** Directory Code  
B1290: Enter Directory  
YOU: **1\*\*** Directory A  
B1290: Directory A, Line One is..  
YOU: **2\*\*** Change  
B1290: 'beep'  
YOU: **#1 #3 #8 #8**  
*[RADIO][ALERT][VOICE][VOICE]*  
B1290: Directory A, Line One is RADIO ALERT VOICE VOICE  
YOU: **\*\*** Next  
B1290: Directory A, Line Two is..  
YOU: **#\*\*** Quit  
B1290: Enter Directory  
YOU: **#\*\*** Quit

Now remove the acknowledge request prompt.

B1290: Enter Program Code

YOU: **[6][\*][\*]**

B1290: Dial Format is Zero

YOU: **[\*][\*]** Next

B1290: Squelch is 0

YOU: **[\*][\*]** Next

B1290: Relay voice is On

YOU: **[\*][\*]** Next

B1290: Acknowledge Voice is On

YOU: **[0][\*][\*]**

B1290: Acknowledge Voice is Off

YOU: **[\*][\*]** Next

B1290: Dial Tone is on

At this point you are finished programming and may hang up.

YOU: **[\*][\*]** Next

### Example 8: Activating an Annunciator Panel

In this system application, a B1290 is used to report alarms from a number of remote locations by turning the lamps of an annunciator panel on and off.

Figure 6 shows a system where two remote sites are transmitting DTMF codes to a central site. The Alarm On code associated with the remote alarms is the same as the Relay On code at the central site. Similarly, the Alarm Off codes at the remote locations are the same as the Relay Off codes at the central site.

When a remote alarm occurs, the DTMF code for that alarm is transmitted to the central site. On receiving this code, the central site activates the relay associated with that alarm. When the alarm clears, the Off code is transmitted from the remote, and the central site's associated relay is released.

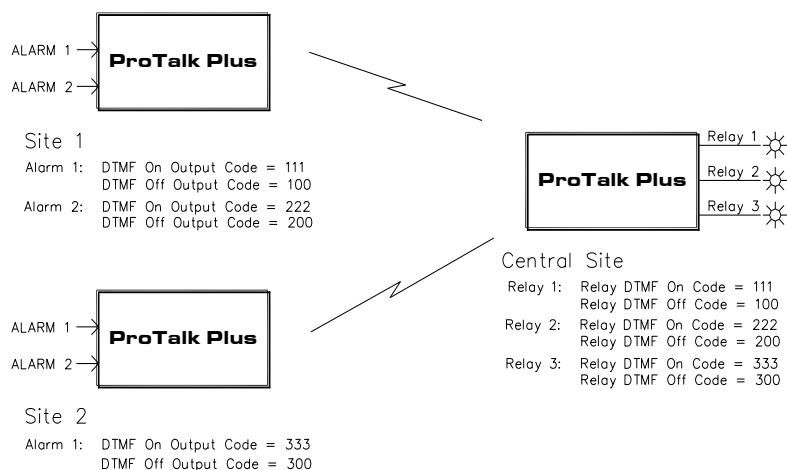


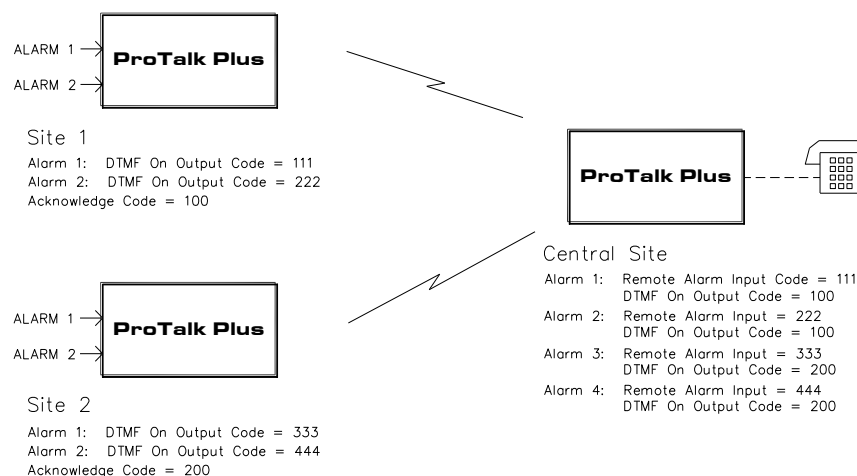
Figure 6 Activating an Annunciator Panel

### Example 9: Concentrating Alarms from Remote Sites

In the following example, a number of remote sites report their alarms over radio to a B1290, which concentrates the alarms and reports them over the telephone.

Figure 7 is an example of two remote sites communicating with a central site to have their alarms announced over the telephone. At the remote sites, the B1290s are programmed to operate over radio. They are programmed with an alarm On output code and an Acknowledge Code. At the central site, the B1290 is programmed to accept remote alarm inputs on alarms 1, 2, and 3, and is connected to a telephone.

When one of the remote units is alarmed, it will send its alarm ON output code over the radio. This code will be interpreted as a remote alarm input code at the central unit. This will initiate the B1290 to send its alarm report over radio and telephone. As part of its alarm sequence over radio, the B1290 will send its alarm On output code. This code will be interpreted as an acknowledgment by the remote, and it will stop sending the alarm. The central unit will continue to report over radio and telephone until it is acknowledged.



**Figure 7 Concentrating Remote Alarms**

### Example 10: Adding an Expander (B1292)

In this example, you are adding an expander to a B1290 to increase the number of alarm inputs and relay outputs.

Install and program the main B1290 unit as per the instructions in this manual. Install the expander within 100' of the B1290. Complete the wiring to all the alarms and relays. Connect the cable supplied with the expander from the auxiliary connector on the B1290 to the EXP connector on the expander. Apply power to the installation

The expander is programmed from the B1290. Note that when the Program Code is entered, it is preceded by the number of the expander.

B1290: Enter Program Code

YOU: **7** **\*** **\*** *Expanders*

B1290: Expander Number is 0

YOU: **1** **\*** **\*** *Enter 1 for the number of expanders*

B1290: Expander Number is One

YOU: **\*** **\*** *Next*

B1290: Expander Site Voice is 0 (default is not to announce the expander ID)

YOU: **\*** **\*** *Next*

B1290: Enter Program Code

YOU:        ①①\**Expander 1, Voices*

B1290:      Enter Voice Code

YOU:        ①\**Record Alarm Voices*

B1290:      Expander One Site is...

YOU:        \**Next (Site ID is disabled - don't need a voice message)*

B1290:      Expander One, Alarm One is...

YOU:        ②\**Change this voice*

B1290:      beep-beep

YOU:        *Intrusion*

B1290:      Expander One, Alarm One is Intrusion

YOU:        \**Next*

B1290:      Expander One Alarm Two is...

YOU:        ②\**Change this voice*

B1290:      beep-beep

YOU:        *High Temperature*

B1290:      Expander One, Alarm Two is High Temperature

YOU:        \**Next*

B1290:      Expander One, Alarm Three is...

Continue programming in the normal fashion, remembering to enter the number of the expander before the Program Code. Only the voices **MUST** be programmed; the other parameters have their standard defaults. Not all parameters are accessible in the expander. The following is a list of those which may be programmed:

- Voices
- Relay On/Off codes
- Alarm On/Off codes
- Remote alarm input codes
- Alarm format
- Relay On time
- Alarm delay (debounce)
- Expander Site ID enable

If you try to change the parameters in other expanders, the B1290 will announce *Error*. To solve this problem, define all of the expanders in the system in the B1290 using program code 7 (number of expanders).

To change the Alarm On code for the first alarm on the second expander, you would program the following (the example assumes that the number of expanders has already been set to 2 as shown above):

B1290:      Enter Program Code

YOU:        ②③\**Expander 2, DTMF Codes*

B1290:      Enter DTMF Code

YOU:        ④\**Alarm On/Off Output codes*

B1290:      Expander Two Alarm One On Code is Empty

YOU:        ⑨⑥⑦⑧\**Enter code 9678*

B1290: Expander Two Alarm One On Code is 9678

*YOU:*  *Next*

etc.

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## 10. TROUBLESHOOTING

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### **Problem: I've hooked up the B1290 as per the installation instructions but nothing happens.**

- Use a voltmeter to check that the power supply is properly connected. If an AC adapter is being used, it should have an output of at least 12 volts DC with a center-negative power connector. If the DC power source is connected to the RADIO terminal block, it should have the positive lead connected to terminal 8 and the negative lead to terminal 7.
- Do not attach power to both inputs at the same time.

### **Problem: The B1290 will not program from a local programming phone.**

- If you do not hear the voice prompt to begin programming, check that the programming phone is plugged into the PGM jack and not the PHONE jack.
- If you hear the voice prompt to begin programming, but the B1290 does not register your entries, check that you are using a tone phone. Sometimes a pushbutton phone actually sends dial pulses rather than DTMF. You can tell the difference by listening in the earpiece; pulse dialing sounds like clicking, DTMF like tones.
- Check for the TONE LED on the front panel when a digit is being received. Some phones send short bursts of tone rather than continuous tone while the key is depressed. If the B1290 is not detecting DTMF, try another phone.
- Check the setting of the receive level for the phone port. Since it is not possible to do this using the programming phone, it will have to be done with the programming software.
- Disconnect the RX input from the radio. Audio received from this input is summed with the audio from the programming phone. If noise is being received, it will affect the decoding of tones and the programming of the voices. The RX input should always be connected to squelched audio.

### **Problem: The B1290 does not dial out over the telephone line when an alarm occurs.**

- Check that the phone line is plugged into the correct jack. The jack labeled PGM is for a local programming phone; the telephone line should be plugged into the PHONE jack.
- Check that the telephone is dialing from the correct directory (Program Code 2). The B1290 has four separate directories: A, B, C and D. Check that the telephone numbers are entered correctly in the selected directory, and that the directory is not empty.
- Check that an alarm is actually present, as indicated by the LEDs on the front panel. In its default condition, the B1290 expects to see a closure to ground at the alarm input. If your alarm inputs are normally closed contacts which open on an alarm condition, this parameter may be adjusted using Program Code 5. The debounce can also be set in this section. This parameter may be set to delay reporting an alarm until it has been present for a certain number of seconds, in which case it will not recognize a momentary closure.
- Check the program cable. The B1290 (Version 1) will remain in program mode if the DB9 cable is still connected to the unit. The alarm and RUN LEDs will flash when in this state.

### **Problem: The B1290 waits a long time before announcing the alarm over the radio.**

- The B1290 will wait for one minute when the COS input is busy and then transmit anyway. This is done to ensure that an open squelch on the radio does not disable the reporting operation. Check the Squelch Polarity setting to make sure that it matches the operation of the radio's COS output. If the COS input to the B1290 is left open the Squelch Polarity should be set to 0 using Program Code 6.
- Check the alarm delay (debounce) parameter using Program Code 5. If a delay has been programmed, the B1290 will wait until the alarm has been present for that interval before reporting it.
- Check the directory programming to make sure that there is not an unwanted Wait command present.

### **Problem: The B1290 continues dialing even after the alarms have been acknowledged.**

- The most common cause of this problem is fleeting alarms. They occur when the device reporting an alarm to the B1290 gives a series of pulses on the contacts instead of a clean closure. If the problem cannot be corrected in the

field wiring, one option is to “debounce” the alarms using the B1290 alarm delay parameter using Program Code 5. When this value is set, contacts must be closed for a specific period of time before they are recognized as alarms.

- Check if any new alarms are announced when the B1290 continues to dial after it has been acknowledged. Sometimes alarms at a remote site are related, occurring in a chain reaction from a single cause. The B1290 will start dialing when it receives the first alarm, but if another alarm occurs in the meantime, it will keep dialing until all the alarms are acknowledged.

**Problem: The B1290 won't answer the phone.**

- Check that the phone line is plugged into the PHONE jack and not the PGM jack.
- Check that the phone line is using the inner red/green pair, and not the outer black/yellow pair (normally reserved for line 2).
- Check that the B1290 is configured to answer the phone, using Program Code 4. If the number of rings before answering is set to 0, the B1290 will never answer the phone.
- Answering the telephone will not occur if the B1290 is engaged in any of these activities: speaking on the radio, in local programming mode and when it is using the phone line to call out. Counting of rings only begins once the unit is in its idle state.
- Check that the ringing voltage on the telephone line exceeds 40 VAC at 20 Hz. The RING LED located on the front panel will indicate if proper ringing voltage is being received.
- Check that the telephone line has a standard ringing cadence of two seconds on, four seconds off. If the ringing cadence is greatly different, it may not be detected.

**Problem: The B1290 will not acknowledge.**

- Check that you are sending the correct digits. The acknowledge code can be changed using Program Code 3.
- If the B1290 is not acknowledging over radio, it may be necessary to adjust the receive level setting for the radio port.
- If the B1290 is not acknowledging over the telephone line, it may be necessary to adjust the receive level setting for the phone port.
- Check that the TONE LED on the front panel of the B1290 lights when a DTMF digit is received.

**Problem: The B1290 does not activate its relay when I send the DTMF On code.**

- Check that you are sending the right digits. The relay On/Off codes can be changed by using Program Code 3.
- Check the relay On time using Program Code 5. If the setting is 0, the relay will stay On until it is commanded Off. For any other setting, the relay will only operate for the programmed number of seconds.
- If the relays do not operate from codes sent over the radio, it may be necessary to adjust the receive level setting for the radio port.
- If the relays do not operate from codes sent over the telephone, it may be necessary to adjust the receive level setting for the phone port.
- Check that the TONE LED on the front panel of the B1290 lights when a digit is received.

**Problem: Our operators live in an area which has a dial pulse exchange. How can they acknowledge the B1290 when it calls?**

- Even though the operators have rotary phones, they can still send tone codes if they have a DTMF pad, purchased separately, which sits by the phone.
- The B1290 may be programmed to automatically acknowledge after eight rings. Thus if the B1290 calls an operator with a dial pulse phone, the operator can hang up after he hears the message, call the B1290 right back, let the phone ring eight times, and the B1290 will recognize that as an acknowledgment. Set the number of rings before answering to # in the Configuration section (Program Code 4), and put a Wait command in the next directory line to



allow time for them to call the B1290 back.

**Problem: How can I prevent unauthorized personnel from calling up the B1290 and altering its programming?**

- In its default condition, the B1290 does not require any type of password. If you wish to enter one, refer to the Access Code in the DTMF Codes section (Program Code 3). If an Access Code is programmed, anyone calling the B1290 will receive a report of its status, but it will prompt the caller to enter the Access Code before allowing them into the programming mode.

**Problem: Can I use the [\*] character as part of my DTMF strings? Won't this be confused with the "Enter" code?**

- The [#] and [\*] characters may be used as a part of any programmable DTMF string. The only time you must be careful is when entering an asterisk (\*) as the last digit in a string. Be sure to wait more than one second after entering the last digit before hitting Enter ([\*][\*]); otherwise the last [\*] will be interpreted as part of the Enter code.

**Problem: The B1290 has lost its programming.**

- As it runs, the B1290 is constantly performing internal self-checks, and on rare occasions it may find that a memory location has been corrupted. If that happens, the B1290 resets all programmed parameters (except the voice messages) to the default values. At the same time, it will announce *Program Code Error* over the radio. As the telephone directories have been lost, the B1290 cannot dial out to report the failure over the phone. The only way you will be able to tell that something has gone wrong is by phoning the B1290; it will announce a *Program Code Error* as soon as it answers the phone. In order to have some local indication that an error has occurred, hook a local speaker into the radio connections.

The most common causes of a memory loss are power spikes which enter the board through the power, ground, telephone line, or radio connections.

**Problem: I tried to change the telephone numbers and now the B1290 will not dial out at all.**

- Check the programming for Directory A to be sure that the correct command sequence is entered. If a Directory Control Code is being used, make sure that the B1290 has not been changed to a directory that disables the alarm reporting. This would be the case where a directory contains the single Wait command or possibly commands for only the radio port.

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## 11. SPECIFICATIONS

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<i>Alarm Inputs</i>	8, optically isolated, 2mA to operate, ground closure required.
<i>Control Outputs</i>	4 independent form C outputs controlled by programmable codes or used as special function outputs. Rated: 1 Amp at 30 Volts DC, 0.3A at 120V AC
<i>Telephone Connection</i>	RJ11; tone or pulse line.
<i>Programming Connection</i>	RJ11; accepts a standard telephone.
<i>Receive Audio</i>	-20 dBm to 0 dBm, 10 k ohm impedance; unbalanced, AC coupled.
<i>Transmit Audio</i>	-20 dBm to 0 dBm, 600 ohm impedance, unbalanced, AC coupled.
<i>Channel Busy (COS)</i>	Ground closure.
<i>PTT</i>	Open collector, 25 V max, 150 mA max.
<i>Acknowledge Input</i>	Ground closure.
<i>Voice Quality</i>	Digitized, toll quality, 32 kbps.
<i>Power</i>	Version 1: +11.5 VDC to +28 VDC, 100 mA standby current, 10 mA per active relay.  Version 2: +10V DC to +30V DC, 50 mA standby current, 150 mA maximum current, 10mA per active relay
<i>Environment</i>	-40°C to + 60°C, 95% relative humidity, non-condensing.
<i>Physical</i>	6.5" x 8.5" x 2" Plug-in terminals

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## 12. APPENDIX A – PROGRAMMABLE FEATURES

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Alarm Messages	Unique Site ID plus individual messages for each input. Message length is variable
Alarm Polarity	Selects NO or NC input format
Alarm Latch	Latches fleeting alarm inputs
Alarm Debounce	Selects the delay time before a change of state on the input is valid. Range is 0.1 to 19.9 in either seconds or minutes
Alarm Directory	Selects one of four directories that contain command actions to be taken when the alarm is active.
Interval Timer	Two stage timer that uses 'A' interval 'A' times before switching to 'B' interval. Both 'A' and 'B' interval are adjustable up to 249 minutes.
Acknowledge Code	Stops the reporting sequence: 1 to 8 digits
Interrogate Code	Speaks alarms and relay state: 1 to 8 digits
Alarm On/Off Output Codes	Sent when an alarm becomes active (on) or when it returns to normal (off). Different codes for each alarm. 1 to 8 digits
Remote Alarm Input	Simulate an alarm condition when received. Different codes for each alarm. 1 to 8 digits
Directory Control Code	Changes the alarms to use different directories; also referred to as shift change. Two modes are available: one where all alarms are assigned to Directory A and can be controlled to alternately use the other three directories and another where Directory A alternates with Directory B and Directory C alternates with Directory D.
Directory Commands	<p>Each directory can have up to 20 lines of command sequences. The commands are executed when an alarm using the directory is active. The commands are:</p> <ul style="list-style-type: none"><li>‣ Dial - phone the programmed number.</li><li>‣ Voice - Speak the alarm messages</li><li>‣ Radio - turn on the radio transmitter</li><li>‣ Wait - Insert a pause: 1 to 249 seconds.</li><li>‣ 2 Tone - send a two tone page</li><li>‣ 5 Tone - send a five tone page</li><li>‣ 1 Tone - send a single tone</li><li>‣ Alert - send a beeping tone</li><li>‣ DTMF - send a string of digits</li><li>‣ Answer - monitor the call progress signals and wait for the called party to speak before announcing the alarm message.</li></ul>
Access Code	Password for dial-up access to programming: 1 to 8 digits
Acknowledge Request	The acknowledge request at the end of the alarm annunciation can be disabled for use with public address systems.
Number of Rings	Sets the number of rings before the B1290 will answer the line: 1 to 8 rings or never.
Squelch Polarity	Sets the radio busy monitor to either high or low when busy.
Relay Voices	Voice messages that are returned when a relay is operated.
Disable Relay Voices	Relay voices are not spoken.
Relay On/Off Codes	DTMF codes that turn the relay on and off. Independent for each relay: 1 to 8 digits
Relay Timer	Makes the relay a timed type where it will remain on for the specified time after the On code is received. Range is 1 to 199 in either seconds or minutes
Relay Special Function	<p>These automatic functions can be assigned to the relays:</p> <ul style="list-style-type: none"><li>‣ Relay 1: New (unacked) alarm on</li><li>‣ Relay 2: Any alarm on</li><li>‣ Relay 3: Alarm acknowledged (timed)</li><li>‣ Relay 4: Error</li></ul>

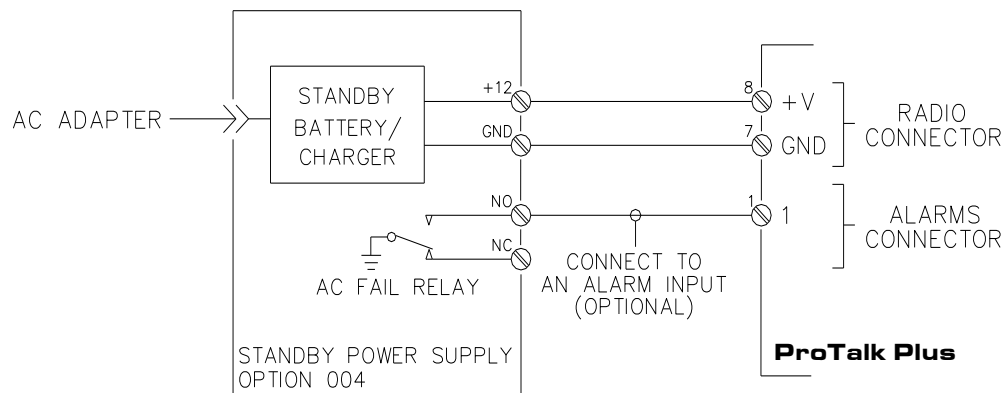
Pulse Dial	Forces dialing to be pulse instead of tone.
Number of Expanders	Sets the number of connected expanders.
Disable Expander ID	Stops the site ID in the expander from being spoken.
Audio Levels	Sets the gain for audio signals in the B1290

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## 13. APPENDIX B – OPTIONS

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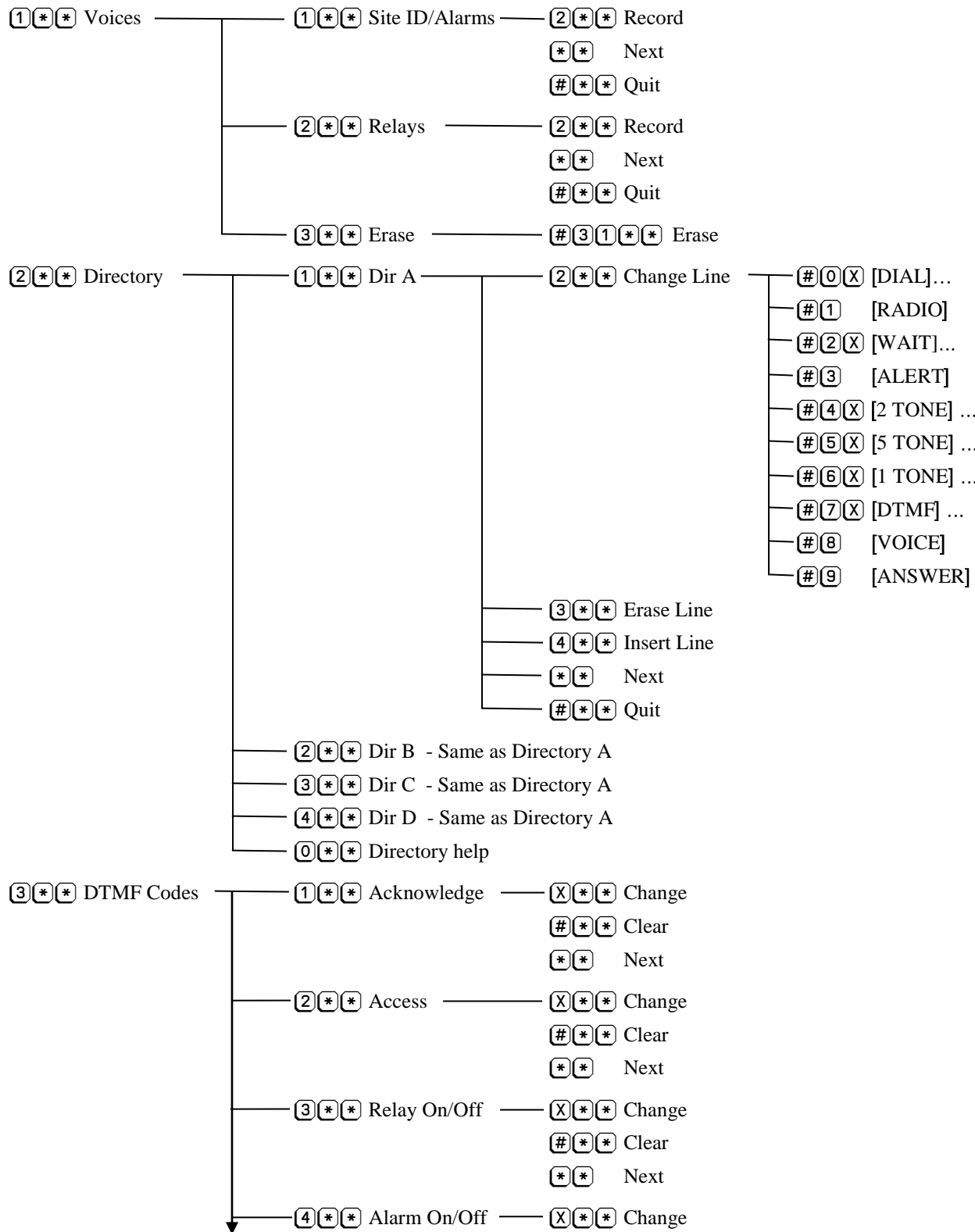
B1256	AC Adapter
B1292	Expander module. Adds 8 inputs and 4 relays. Maximum of 7 expanders
Option 004	External power pack with 120 VAC power supply, sealed battery and charger, 12 hour capacity in standby. Connection of the Option 004 power supply is shown in Figure 8.

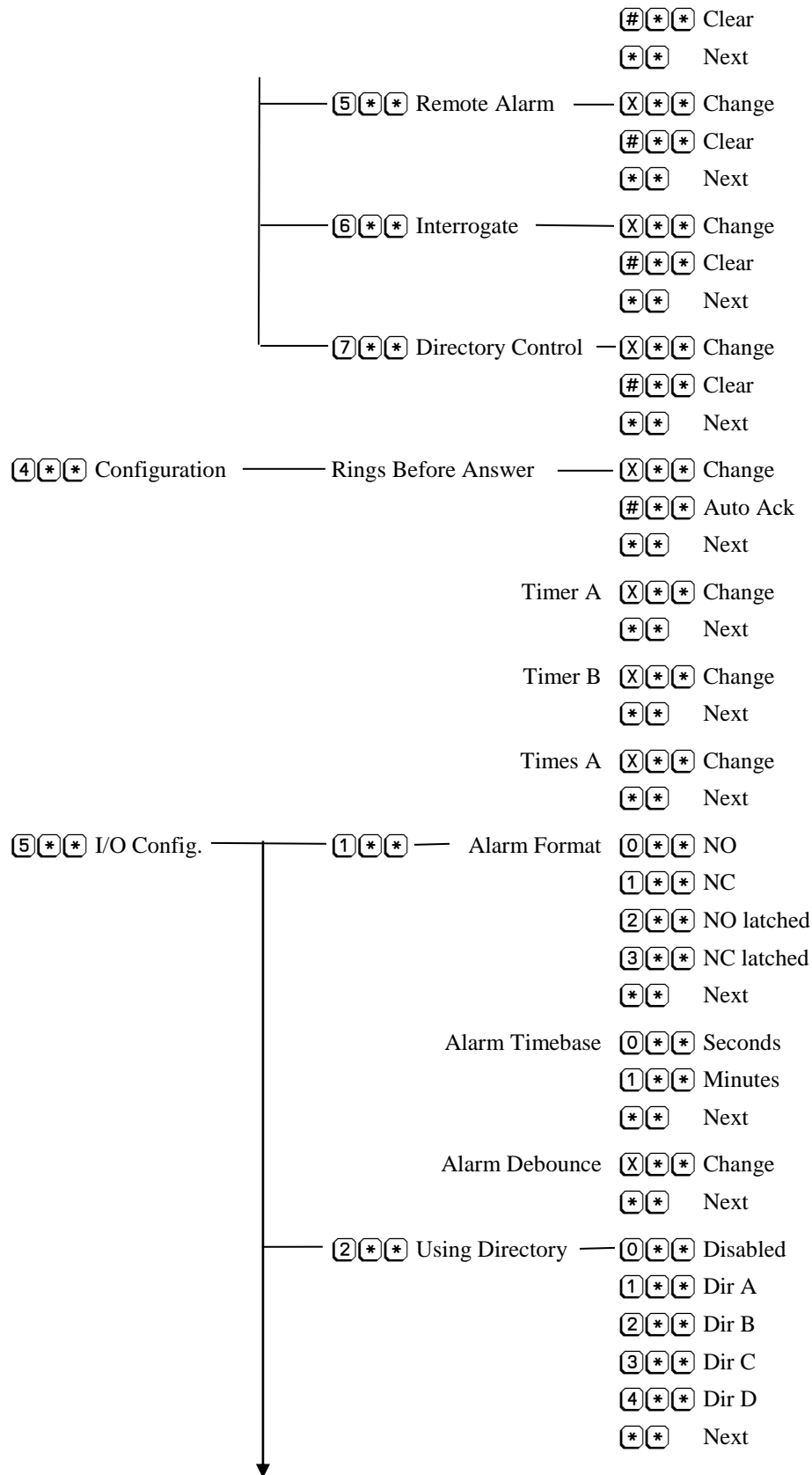


**Figure 8 Option 004 Connections**

## 14. APPENDIX C – PROGRAMMING TREE

The parameters used to program the ProTalk Plus are given as a summary below. Where X appears, user data is entered





└─ 3** Relay Timebase		0** Seconds
		1** Minutes
		** Next
Relay Timer		0** Not timed
		1** Special
		X** Change
		** Next
6** System	_____ Dial Format	0** Tone
		1** Pulse
		** Next
Squelch Polarity		0** Busy low
		1** Busy high
		** Next
Relay Voices		0** Off
		1** On
		** Next
Ack Request		0** Off
		1** On
		** Next
Dial Tone (Call Progress)		0** Off
		1** On
		** Next
7** Expanders	_____ Number of Expanders	X** Change
		** Next
Site Voice Enable		0** Off
		1** On
		** Next
8** Reset Database	_____ #31**	Reset
		** Next
9** Audio Levels	_____ Radio TX Tone	X** Change
		** Next
Radio TX DTMF		X** Change
		** Next
Radio TX Voice		X** Change
		** Next
Radio RX		X** Change
		** Next

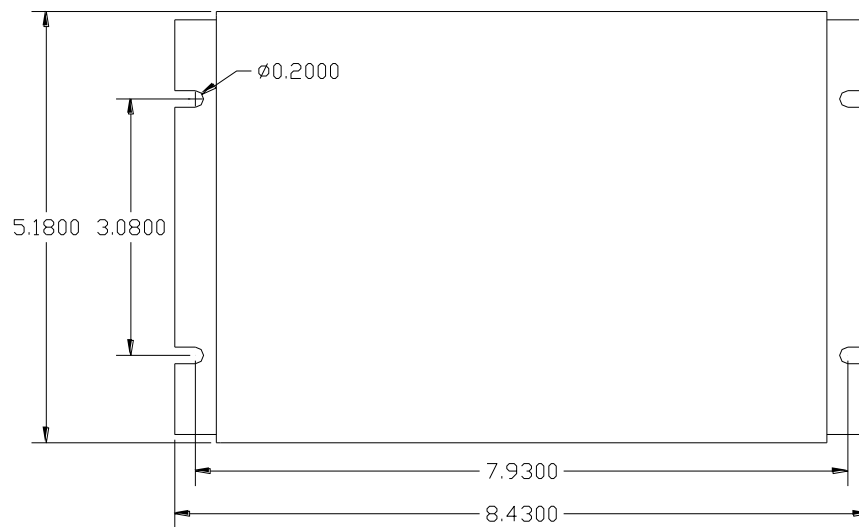


Phone RX ☒ ☐ ☐ Change  
☐ ☐ Next

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## 15. APPENDIX D – MOUNTING

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**Figure 9 Mounting Detail**

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## 16. NOTICES

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### **CSA Certification**

The B1290 product has 60950-1 safety certification for Canada and USA.

### **Compliance**

This Class A digital apparatus complies with Canadian ICES-003. This device complies with part 15 of the FCC Rules. 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.

### **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.**

**Operation of this equipment in a residential is likely to cause interference. Should this occur, the user (at his own expense) will be required to apply whatever measures necessary to correct the interference.**

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## **17. WARRANTY STATEMENT**

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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 2 years. 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.

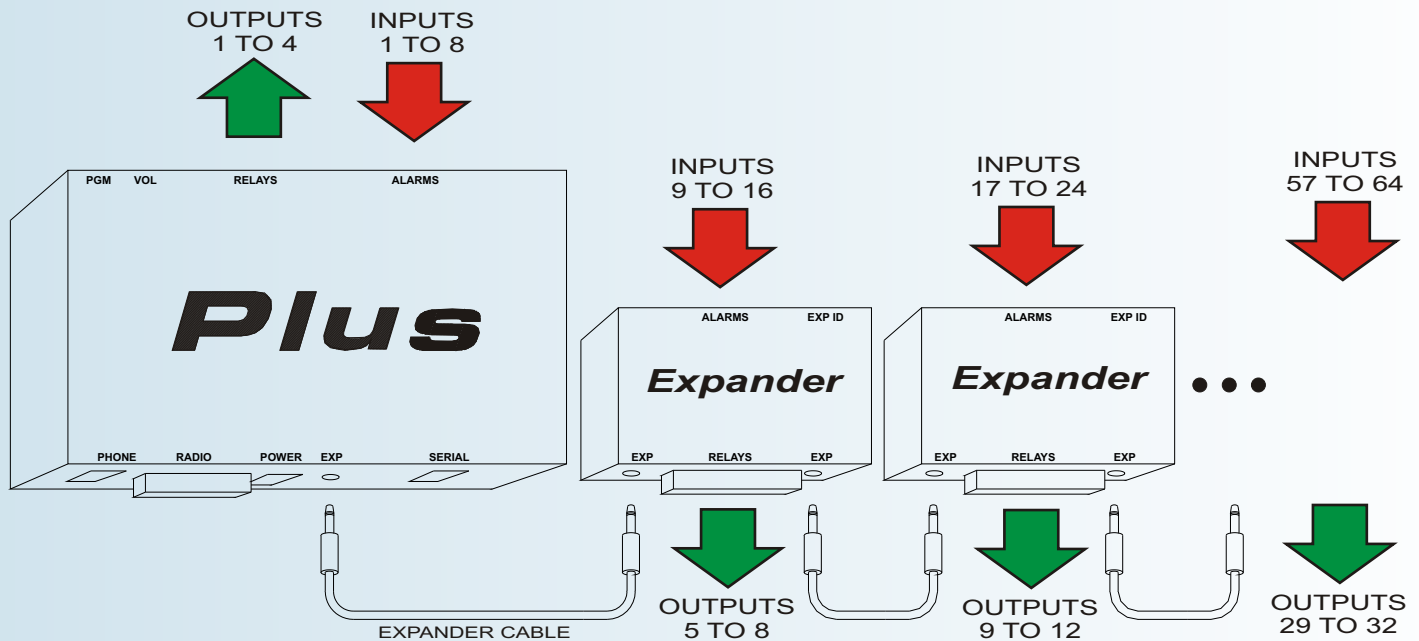
(1)Consequential Damages: Barnett Engineering Ltd. shall not be liable for any incidental or consequential damages incurred as a result of any defect in any equipment sold hereunder and Barnett Engineering Ltd.'s liability is specifically limited to its obligation described herein to repair or replace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



### Key Features

- Expands ProTalk Plus input and output capabilities
- Each expander has 8 alarm inputs and 4 relay outputs
- Up to 7 expanders can be used
- 64 alarm inputs and 32 relay outputs maximum
- Fully compatible with previous expanders
- -40°C to +60°C temperature range



## Specifications

### Physical

5.5" wide x 4.5" high x 2" deep  
Steel, powder coated matte black  
Mounting ears for panel installation

### Environment

-40°C to + 60°C, 95% humidity, non-condensing

### Connectors

Plug-in screw terminal block unless noted

### Power

+11.5 to +28 VDC, negative ground, 50 mA standby, 150 mA maximum current, 10 mA per active relay

### Alarm Inputs (8)

Optically isolated, 2 mA to operate, ground closure required

### Relay Outputs (4)

Independent Form C outputs controlled by programmable codes or used as special function outputs. Rated: 1A at 30 Volts DC, 0.3A at 120 Volts AC

### Expander Number

Rotary switch selects the expander number, externally accessible

### Indicators

Alarms (8) - Red LED  
Outputs (4) - Red LED  
Status - Green LED

Run

TX (Data activity on the expander cable)

RX (Data activity on the expander cable)

### Expander Ports (2)

2.5mm jack for connection to the alarm reporting unit and other expander modules

### Expander Cable

Coaxial cable with 2.5mm plugs, 24" standard length, longer lengths available  
Total combined length of all expander cables in a system is 75'

# **ProTalk<sup>®</sup>**

## **Expander**

### **Operating Manual**

### **Model B1292**

**July 28, 2009**  
**Rev. 1.01**





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## 1. INTRODUCTION

---

The B1292 ProTalk Expander unit provides an additional 8 digital inputs and 4 relay outputs to either the B1225 or B1290 Alarm Reporting Units. Up to 7 expanders can be connected to the master unit for a total of 64 inputs and 32 outputs.

The B1292 is fully compatible with previous expanders and can be intermixed with older units on existing systems. It is housed in a compact 3.5' x 5.5' metal case and features LED indicators to display alarm and relay status information.

A coaxial communications cable connects the master unit to the first expander and each additional expander in a daisy-chain manner. The master unit controls communications on the cable.

---

## 2. INSTALLATION

---

The B1292 features plug-in terminal blocks for all alarm and relay connections.

A coax cable (supplied) connected to the EXP connector is used to establish serial communications with the master unit. Additional expanders are connected in a daisy chain configuration. Expanders must be powered up before or at the same time as the main ProTalk ARU.

Alarm Connector		Relay Connector	
1	Alarm 1	1	Relay 1 NC
2	Alarm 2	2	Relay 1 Common
3	Alarm 3	3	Relay 1 NO
4	Alarm 4	4	Relay 2 NC
5	Alarm 5	5	Relay 2 Common
6	Alarm 6	6	Relay 2 NO
7	Alarm 7	7	Relay 3 NC
8	Alarm 8	8	Relay 3 Common
9	Ground	9	Relay 3 NO
10	Ground	10	Relay 4 NC
11	Ground	11	Relay 4 Common
12	Power +11.5 to +28 VDC	12	Relay 4 NO

Expander Communications (2)	
Inner	Signal
Outer	Ground

There are two connectors for expander communications (EXP); both connectors operate in the same way. It does not matter which connector is used for attaching the previous or next device in the system.

***Do not apply power to the EXP connector.***

3.1 WIRING DIAGRAM

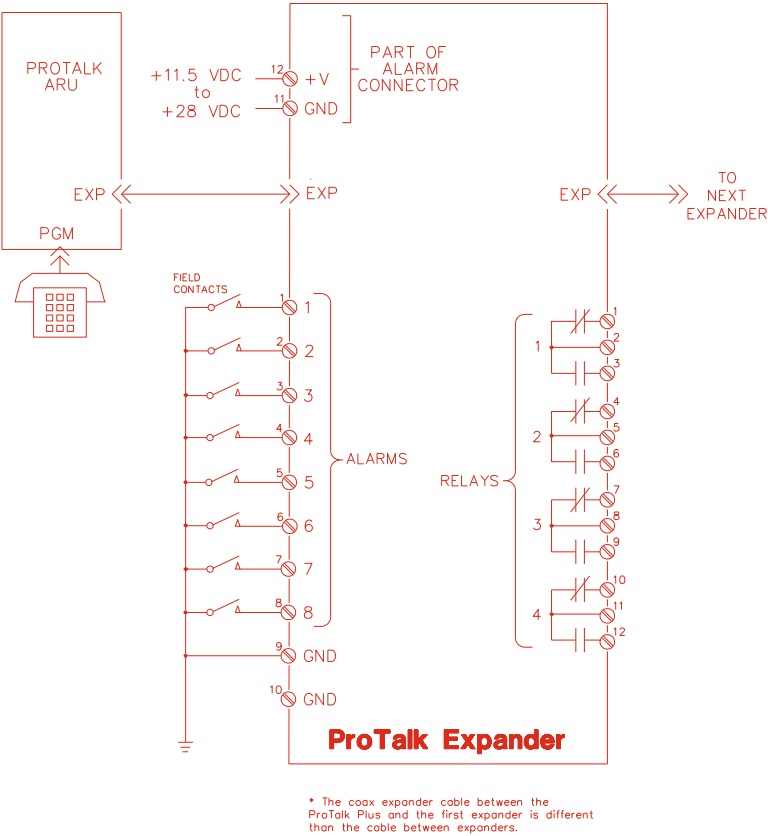


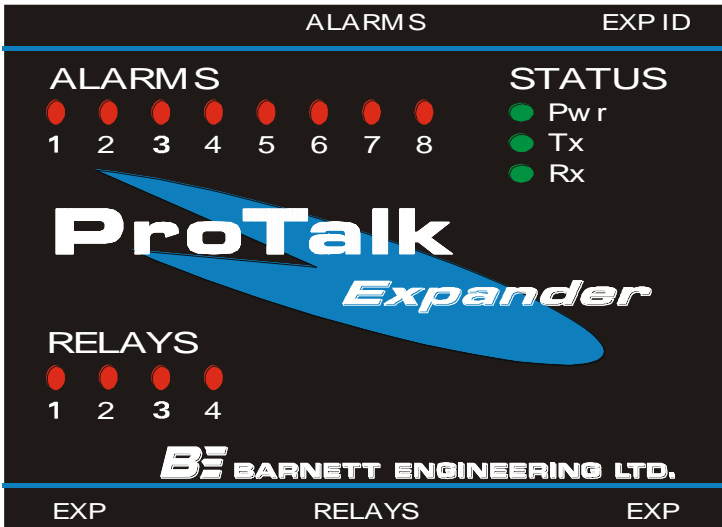
Figure 1 ProTalk Expander Wiring Connections

---

### 3. OPERATIONS

---

The front panel of the B1292 is shown in Figure 2. The front panel indicators assist in verifying the correct operation of the unit. Detailed information on the overall operation of the alarm system that the expander is being used with is contained in the manual for the main reporting unit.



**Figure 2 ProTalk Expander Front Panel**

<b>Alarm LEDs</b>	The Alarm LED is on when the associated input is in the alarm state. When connected to a B1290, unacknowledged alarms will be flashing and any that have been acknowledged will be on solid.
<b>Relay LEDs</b>	The Relay LEDs light whenever the associated relay is on.
<b>PWR LED</b>	The PWR LED indicates that power has been applied to the unit as well as the operational mode that it is configured for. Solid indicates that the unit is in B1225 mode, flashing indicates B1290 mode.
<b>Tx LED</b>	The Tx LED lights when the B1292 is sending to the main unit.
<b>Rx LED</b>	The Rx LED lights when a message are present on the serial bus.

---

## 4. PROGRAMMING (B1225 MODE)

---

### 4.1 OVERVIEW

Each expander has a unique ID number (1-7) set on the rotary switch. This ID number is used during programming to select the desired unit. If the expander ID is changed, the system must have power removed and then reapplied before the new address is recognized.

The operational mode of the B1292 will automatically be set when the unit is programmed. A solid PWR LED indicates B1225 mode.

Before programming the expander the “Number of Expanders” and “Expander Site Voice” must be set on the B1225. The expander is programmed through the B1225 with the handset.

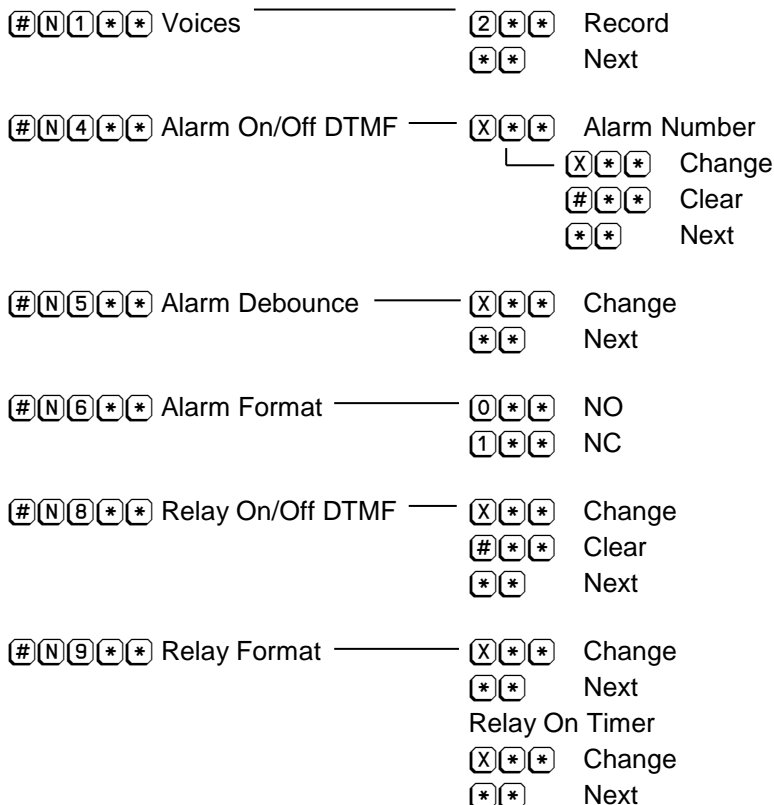
At the “Enter Program Code” prompt, the different functions of the expander can be selected by entering their program code. When an individual expander is accessed, its configuration is read into the B1225 over the expander serial connection. At this point, if necessary, the operational mode of the expander is automatically set B1225 mode. When the program phone is hung up the new configuration is written back to the expander and stored in non-volatile FLASH memory.

Although expanders are shipped with a “default” configuration, the Alarm Voices must be programmed.

A description of the programming procedure for a B1225 expander is given below. Use these codes in conjunction with the programming manual for the B1225. N is the expander ID number of the unit being programmed.

## 4.2 PROGRAMMING FLOWCHART (B1225 MODE)

[N] = expander ID number; where [X] appears, user data is entered.



## 4.3 PROGRAMMING EXAMPLES

### [#][N][1][\*][\*] VOICES

The site identifier and each of the 8 alarm inputs are programmed for the expander in this section. The alarm messages are identified as N.1 to N.8 instead of 1 to 8 in the master B1225.

Example: You want to program the site identifier in the first expander to say “Delta Compressor”

ARU: ENTER PROGRAM CODE  
 YOU: #11\*\* (selecting voice message)  
 ARU: EXPANDER1 SITE IS ...  
 YOU: 2\*\* (selecting change)  
 ARU: BEEP - (record light comes on)  
 YOU: (speaking) DELTA COMPRESSOR



ARU: EXPANDER 1 SITE IS DELTA COMPRESSOR

YOU: \*\*

ARU: ALARM NUMBER 1 point 1 IS ... (on to the alarm messages)

### **#N4\*\* ALARM ON/OFF DTMF**

The DTMF on and off strings will be programmed for the expander specified. As in the voice message programming section, the expander and alarms will be announced as N point 1 to N point 8

Example: You want to program the second input in expander 1 to have a DTMF ON code of 123 and an off code of 456.

ARU: ENTER PROGRAM CODE

YOU: #14\*\*

ARU: ENTER ALARM NUMBER

YOU: 2\*\*

ARU: ALARM NUMBER 1 point 2 DTMF ON CODE IS ...

YOU: 123\*\*

ARU: ALARM NUMBER 1 point 2 DTMF ON CODE IS 123

YOU: \*\*

ARU: DTMF OFF CODE IS ...

YOU: 456\*\*

ARU: DTMF OFF CODE IS 456

YOU: \*\*

ARU: ENTER ALARM NUMBER

### **#N5\*\* ALARM DEBOUNCE**

Alarm delay time (debounce time) can be set for each expander and must be between 0.1 and 19.9 seconds. One debounce time is used for all of the inputs on a particular expander. Each expander may have a different time. The input must remain active for this period of time in order for it to be considered a change of state.

Example: The debounce time for expander 2 is to be set at 3 seconds.

ARU: ENTER PROGRAM CODE

YOU: #25\*\*

ARU: EXPANDER 2 ALARM DELAY IS 0.5 SECONDS

YOU: 30\*\*

ARU: EXPANDER 2 ALARM DELAY IS 3.0 SECONDS

YOU: \*\*

### **#N6\*\* ALARM FORMAT**

Each alarm input on an expander can be programmed to be 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 a 0 for N.O. contacts or a 1 for N.C. contacts.

Example: The inputs for expander two are to be set for normally closed inputs.

ARU: ENTER PROGRAM CODE

YOU: #26\*\*

ARU: EXPANDER 2 ALARM FORMAT IS 0  
YOU: 1\*\*  
ARU: EXPANDER 2 ALARM FORMAT IS 1  
YOU: \*\*

#### **#N8\*\* RELAY ON/OFF DTMF**

The four relays on each expander can have DTMF on and off codes programmed for remote control. They will be announced as relay numbers X.1 to X.4 . The master will interpret DTMF strings from the radio system as ON or OFF controls for the relays. Each string may be up to 8 characters.

Example: The control codes for the output relays in expander one are to be programmed. The first relay will have an ON code of 789 and an OFF code of 321

ARU: ENTER PROGRAM CODE  
YOU: #18\*\*  
ARU: RELAY NUMBER 1 point 1 DTMF ON CODE IS EMPTY  
YOU: 789\*\*  
ARU: RELAY NUMBER 1 point 1 DTMF ON CODE IS 789  
YOU: \*\*  
ARU: RELAY NUMBER 1 point 1 DTMF OFF CODE IS EMPTY  
YOU: 321\*\*  
ARU: RELAY NUMBER 1 point 1 DTMF OFF CODE IS 321  
YOU: \*\*

#### **#N9\*\* RELAY FORMAT**

This will specify the type of relays being used for each expander. The relays will be announced as N.1 to N.4. Each relay may be of a different format. (0=standard, 1=latched, 2=timed).

: Note: Relay Format 1 (Latched) is not supported in the B1292 and will default to “standard” if selected.

Example: Relay one in expander one is to be set as a timed relay.

ARU: ENTER PROGRAM CODE  
YOU: #19\*\*  
ARU: RELAY NUMBER 1 point 1 FORMAT IS ZERO  
YOU: 2\*\*  
ARU: RELAY NUMBER 1 point 1 FORMAT IS TWO  
YOU: \*\*

After relay 4 format is completed, if any formats are set to 2 (timed) the B1225 will prompt for “Expander N relay on timer is X seconds. The range of the timer is 1 to 199. This applies to all relays that were set for timed.

---

## 5. PROGRAMMING (B1290 MODE)

---

### 5.1 OVERVIEW

Each expander is assigned a unique ID number (1-7) using a rotary switch. This ID number is used during programming to select the desired unit.

If the expander ID is changed, the system must have power removed and then reapplied before the new address is recognized.

The operational mode of the B1292 will automatically be set when the unit is programmed. A flashing PWR LED indicates B1290 mode.

Before programming the expander the “Number of Expanders” and “Site Voice Enable” must be set on the B1290.

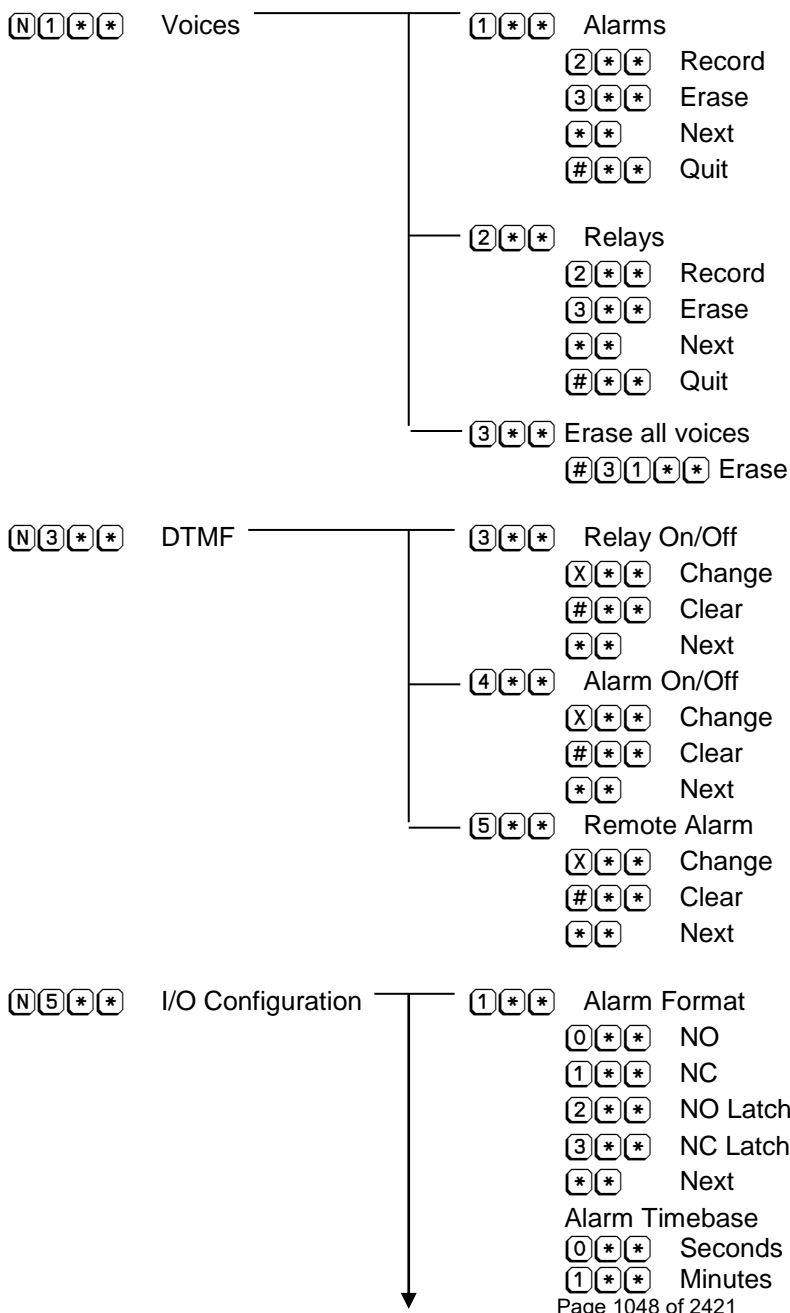
Expanders connected to a B1290 may be programmed through the B1290 handset, remotely or using PC Configuration Software.

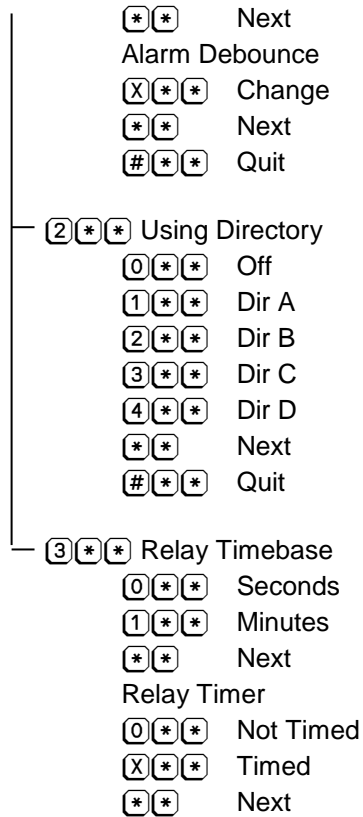
All the expander’s programmed parameters are stored in the main ProTalk Plus and are downloaded on power-up. The B1292 will switch to B1290 Mode when this download is complete.

The following program codes are valid for the B1292 expander when in B1290 mode. Use these codes in conjunction with the programming manual for the B1290. N is the expander ID number of the unit being programmed.

## 5.2 PROGRAMMING FLOWCHART (B1290 MODE)

(N) = expander ID number, where (X) appears, user data is entered.





### 5.3 PROGRAMMING EXAMPLES

#### (N) (1) (\*) (\*) VOICES

The site identifier and each of the 8 alarm and 4 relay voices are programmed for the expander in this section. Voice messages are of variable length and are terminated when the B1290 detects a period of silence.

Example: You want to program the site identifier in the first expander to say “Delta Compressor”

```

ARU: ENTER PROGRAM CODE
YOU: 11*** (selecting voice message)
ARU: ENTER VOICE CODE
YOU: 1***
ARU: EXPANDER 1 SITE IS ...
YOU: 2*** (selecting change)
ARU: BEEP
YOU: (speaking) DELTA COMPRESSOR
ARU: EXPANDER 1 SITE IS DELTA COMPRESSOR
YOU: ***
ARU: EXPANDER 1 ALARM 1 IS ...(on to the alarm messages)

```

## **(N)(3)(\*)(\*) DTMF**

The Relay On/Off, Alarm On/Off and Remote Alarm Codes are programmed in this section.

Example: You want to program the first Relay in expander 1 to have a DTMF ON code of 321 and an off code of 765.

```
ARU: ENTER PROGRAM CODE
YOU: 13**
ARU: ENTER DTMF CODE
YOU: 3**
ARU: EXPANDER 1 RELAY 1 ON CODE IS ...
YOU: 321**
ARU: EXPANDER 1 RELAY 1 ON CODE IS 321
YOU: **
ARU: OFF CODE IS ...
YOU: 765**
ARU: OFF CODE IS 765
YOU: **
ARU: EXPANDER 1 RELAY 2 ON CODE IS ...
```

## **(N)(5)(\*)(\*) I/O CONFIGURATION**

This section allows configuration of the expander alarm format, timebases and directory usage. Refer to the B1290 manual for detailed programming instructions.

Example: You want to program Normally Closed Alarm inputs on expander 2 with the first alarm pointing to directory D.

```
ARU: ENTER PROGRAM CODE
YOU: 25**
ARU: ENTER CONFIGURATION CODE
YOU: 1**
ARU: EXPANDER 2 ALARM FORMAT IS 0
YOU: 1**
ARU: EXPANDER 2 ALARM FORMAT IS 1
YOU: #**
ARU: ENTER CONFIGURATION CODE
YOU: 2**
ARU: EXPANDER 2 ALARM 1 IS DIRECTORY A
YOU: 4**
ARU: EXPANDER 2 ALARM 1 IS DIRECTORY D
YOU: **
ARU: EXPANDER 2 ALARM 2 IS DIRECTORY A
```

---

## 6. SPECIFICATIONS

---

<b>Alarm Inputs</b>	8, optically isolated, 2mA to operate, ground closure required
<b>Control Outputs</b>	4 independent form C outputs controlled by programmable codes, On/Off or timed modes Rated: 1 Amp at 30 Volts
<b>Adjustments</b>	Rotary DIPswitch for setting the expander ID number
<b>Power</b>	+11.5 VDC to +28 VDC 50 mA standby, 200mA max at 12V
<b>Environment</b>	-40°C to + 60°C, 95% relative humidity, non-condensing
<b>Physical</b>	4.5" x 5.5" x 2" Plug-in terminals

---

## 7. WARRANTY STATEMENT

---

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.**

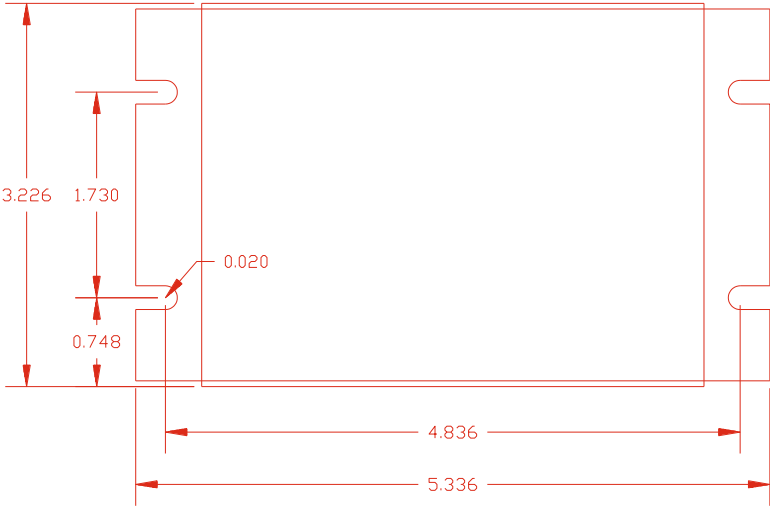
**Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.**



---

## 8. Appendix A - Mounting

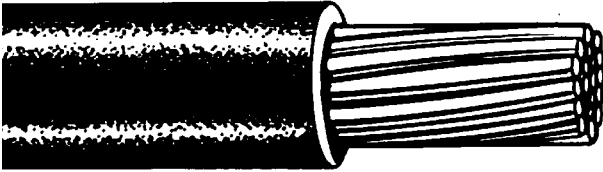
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**Figure 3 Mounting Detail**

# Type RW 90 Copper Conductor

XLPE Insulation,  
90°C Wet or Dry, 600 Volt.



## APPLICATIONS:

CSA listed for use at 90°C conductor temperature in dry or wet locations. May be installed in conduit and other recognized raceways. General purpose wiring for control, lighting and power circuits in residential and commercial buildings and industrial plants and for utility sub-stations, meters and generating plants. Suitable for installation at temperature down to -40°C.

## SPECIFICATIONS:

1. In accordance with CSA C22.2 No 38.
2. The conductor is copper. Sizes 14 AWG (2.08 mm<sup>2</sup>) through 8 AWG (8.37 mm<sup>2</sup>) are solid or concentric strand. Sizes 6 AWG (13.3 mm<sup>2</sup>) through 1000MCM (506.8 mm<sup>2</sup>) are stranded.
3. Allowable ampacities per Table 2 of Canadian Electrical Code for not more than 3 copper conductors in a raceway or cable, 30°C ambient temperature. 5
5. No flame rating. ☐
6. For stranding type of different sizes call local Anixter.

### SHOP DRAWING

This review is solely for the verification of general design quality and does not alleviate the responsibility of the contractor for insuring that all specification, space and installation requirements are met.

Reviewed By: N.K. Reviewed ☒  
 Date: July 11, 2016 Reviewed as noted ☐  
 Resubmit ☐

CHIARELLI ENGINEERING LTD.

### SHOP DRAWING

Reviewed by: Samuel Charbonneau  
 Date: 07 juillet 2016

Reviewed ☒  
 Reviewed as noted ☐  
 Resubmit ☐

Out for approval

SIFEC NORTH INC.

ANIXTER CATALOG NUMBER	SIZE		NO OF STRANDS	INSULATION THICKNESS		NOMINAL O.D.		NOMINAL WEIGHT		AMPS PER COND.	CONDUIT SIZE	
	AWG/MCM	MM <sup>2</sup>		IN	MM	IN	MM	LBS/M FT	KG/KM		IN	MM
SINGLE SOLID CONDUCTOR												
6CL-1401	14	2.08	Sol.	.030	.76	.13	3.30	17	25	15	1/2	13
6CL-1201	12	3.31	Sol.	.030	.76	.14	3.56	26	38	20	1/2	13
6CL-1001	10	5.26	Sol.	.030	.76	.16	4.06	38	56	30	1/2	13
SINGLE STRANDED CONDUCTOR												
6CL-1407	14	2.08	7	.030	.76	.13	3.30	18	26	15	1/2	13
6CL-1207	12	3.31	7	.030	.76	.15	3.81	27	40	20	1/2	13
6CL-1007	10	5.26	7	.030	.76	.18	4.57	41	61	30	1/2	13
6CL-0807	8	8.38	7	.045	1.14	.24	6.10	67	99	45	3/4	19
6CL-0607	6	13.3	7	.060	1.52	.30	7.62	100	148	65	1	25
6CL-0407	4	21	7	.060	1.52	.34	8.64	153	227	85	1	25
6CL-0307	3	27	7	.060	1.52	.37	9.40	192	285	105	1 1/4	32
6CL-0207	2	34	7	.060	1.52	.40	10.16	236	351	120	1 1/4	32
6CL-0119	1	42	19	.080	2.03	.47	11.94	299	444	140	1 1/4	32
6CL-10119	1/0	54	19	.080	2.03	.51	12.95	382	568	155	1 1/2	38
6CL-20219	2/0	67	19	.080	2.03	.55	13.97	470	699	185	1 1/2	38
6CL-30319	3/0	85	19	.080	2.03	.59	14.99	584	868	210	2	51
6CL-40419	4/0	107	19	.080	2.03	.65	16.51	727	1081	235	2	51
6CL-25037	250MCM	127	37	.090	2.29	.73	18.54	863	1284	265	2 1/2	64
6CL-30037	300MCM	152	37	.090	2.29	.78	19.81	1024	1523	295	2 1/2	64
6CL-35037	350MCM	178	37	.090	2.29	.82	20.83	1187	1766	325	2 1/2	64
6CL-40037	400MCM	203	37	.090	2.29	.87	22.10	1349	2007	345	3	76
6CL-50037	500MCM	254	37	.090	2.29	.95	24.13	1668	2481	395	3	76
6CL-75061	750MCM	381	61	.090	2.29	1.14	28.96	2488	3702	500	3 1/2	89
6CL-100061	1000MCM	508	61	.090	2.29	1.29	32.77	3293	4899	585	4	102

\* 1000V material available

**Note:** □

**600 MCM size is available OD = 1.07 in = 27.17 mm**

Home > Products > Electrical Wire and Cable > Control and Power Cable > Anixter # 6CO-40419-02



**APPROVED MANUFACTURERS** | 4/0-1C 19 STR  
ALUM RWU90 XLPE INS -40 TO 90C 1KV BLK CSA  
C22.2 NO.38

Anixter # 6CO-40419-02

Qty:  Meter

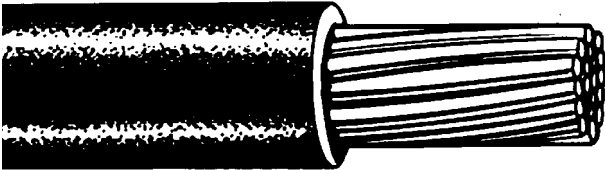
Request Quote ?

SPECIFICATION

<b>Armor:</b>	NO
<b>Composite:</b>	NO
<b>Conductor Count:</b>	1 CONDUCTOR
<b>Conductor Material:</b>	ALUMINUM
<b>Conductor Size:</b>	4/0 AWG
<b>Conductor Type:</b>	STRANDED
<b>Earth/Ground Wires:</b>	NO
<b>Insulation Material:</b>	XLP-CROSS LINKED POLYETHYLENE
<b>Insulation Thickness:</b>	95 MILS (.095")
<b>Jacket Color:</b>	BLACK
<b>Jacket Material:</b>	PVC-POLYVINYL CHLORIDE
<b>Product Type:</b>	RWU90
<b>Screen/Shield:</b>	UNSHIELDED
<b>Temperature Rating:</b>	90 DEGREES CENTIGRADE
<b>Voltage Range:</b>	1KV

# Type RWU 90 Copper Conductor

XLP Insulation,  
90°C Wet or Dry, 1000 Volt.



## APPLICATIONS:

CSA listed for use at 90°C conductor temperature in dry or wet locations. May be installed in conduit and other recognized raceways. General purpose wiring for control, lighting and power circuits in residential and commercial buildings and industrial plants and for utility sub-stations, meters and generating plants. Suitable for direct burial installation. Minimum installation temperature -40°C.

## SPECIFICATIONS:

1. In accordance with CSA C22.2 No 38.
2. The conductor is copper. Sizes 14 AWG (2.08 mm<sup>2</sup>) to 10 AWG (5.26 mm<sup>2</sup>) are concentric strand. Sizes 6 AWG (13.3 mm<sup>2</sup>) through 1000MCM (508 mm<sup>2</sup>) are compressed or compact stranding.
3. Allowable ampacities per Table 2 of Canadian Electrical Code for not more than 3 copper conductors in a raceway or cable, 30°C ambient temperature.
5. No flame rating. ☐
6. For stranding type of different sizes call local Anixter. ☐

## SHOP DRAWING

This review is solely for the verification of general design quality and does not alleviate the responsibility of the contractor for insuring that all specification, space and installation requirements are met.

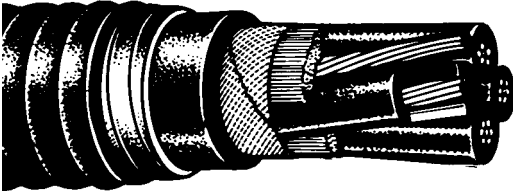
Reviewed By: N.K. Reviewed ☒  
 Reviewed as noted ☐  
 Date: July 11, 2016 Resubmit ☐

CHIARELLI ENGINEERING LTD.

ANIXTER CATALOG NUMBER	SIZE		NO OF STRANDS	INSULATION THICKNESS		NOMINAL O.D.		NOMINAL WEIGHT		AMPS PER COND.	CONDUIT SIZE	
	AWG/MCM	MM <sup>2</sup>		IN	MM	IN	MM	LBS/M FT	KG/KM		IN	MM
SINGLE STRANDED CONDUCTOR												
6CN-1407	14	2.08	7	.060	1.52	.20	5.0	23	34	15	1/2	13
6CN-1207	12	3.31	7	.060	1.52	.21	5.3	32	47	20	1/2	13
6CN-1007	10	5.26	7	.060	1.52	.24	6.0	46	68	30	1/2	13
6CN-0807	8	8.38	7	.080	2.03	.31	7.8	73	108	40	1	25
6CN-0607	6	13.3	7	.080	2.03	.33	8.3	111	165	65	1	25
6CN-0407	4	21	7	.080	2.03	.38	9.6	163	242	85	1 1/4	32
6CN-0307	3	27	7	.080	2.03	.41	10.4	230	342	105	1 1/4	32
6CN-0207	2	34	7	.080	2.03	.44	11.1	245	364	120	1 1/4	32
6CN-0119	1	42	19	.095	2.41	.51	12.9	314	467	140	1 1/2	38
6CN-10119	1/0	54	19	.095	2.41	.54	13.7	387	575	155	1 1/2	38
6CN-20219	2/0	67	19	.095	2.41	.58	14.7	476	708	185	2	51
6CN-30319	3/0	85	19	.095	2.41	.63	16.0	590	877	210	2	51
6CN-40419	4/0	107	19	.095	2.41	.68	17.2	723	1075	235	2	51
6CN-25037	250MCM	127	37	.110	2.79	.75	19.0	870	1294	265	2 1/2	64
6CN-30037	300MCM	152	37	.110	2.79	.81	20.5	1031	1534	295	2 1/2	64
6CN-35037	350MCM	178	37	.110	2.79	.85	21.5	1193	1775	335	2 1/2	64
6CN-40037	400MCM	203	37	.110	2.79	.90	22.8	1353	2013	345	3	76
6CN-50037	500MCM	254	37	.110	2.79	.98	24.8	1674	2490	395	3	76
6CN-75061	750MCM	381	61	.125	3.17	1.17	29.7	2489	3703	500	3 1/2	89
6CN-100061	1000MCM	508	61	.125	3.17	1.32	33.5	3290	4895	5855	4	102

# Teck 90 1 Kv Four Conductors

Aluminum Armor or Galv. Steel, 90°C, 1000 Volt,  
XLPE Insulation, Inner PVC Jacket,  
Interlock Armor, Outer PVC Jacket.



## APPLICATIONS:

For exposed or concealed wiring in wet or dry locations. For use in ventilated, non-ventilated and ladder type cable troughs and ventilated flexible cableway in wet or dry locations. For direct earth burial. Approved for use in Class 1, Division 1, hazardous locations. Typical applications are for power, lighting and control circuits in:

Pulp and Paper Mills  
Refineries  
Steel Mills  
Commercial Centers  
Mines  
Generating Stations  
Industrial Plants  
Chemical Plants  
Food Processing Plants

## SPECIFICATIONS:

1. Conductor: Class B stranded soft copper size #14 AWG-1000MCM.
2. Insulation: Cross-linked polyethylene (XLPE), type RW-90 per CSA Standard C22.2 No 131.
3. Identification: Surface color coding is standard for sizes up to and including No 2 AWG. For larger than No.2 AWG number coding is standard.
4. Grounding Conductor: In multiple conductor cables the uninsulated Class B stranded grounding conductor is included in the cable assembly.
5. Multiple conductor cables are assembled with suitable fillers and binder tape.
6. Inner Jacket: Polyvinyl Chloride (PVC).
7. Armor: Aluminum or galvanized steel interlocking armor.
8. Outer Jacket: Polyvinyl Chloride (PVC) heat, flame and moisture resistant jacket, suitable for installation in temperatures down to minus 40°C. The standard color is black but colored jackets are available.
9. The Cable is Certified to CSA C22.2 No.131 and No.174 for use in Class 1, Division 1, hazardous locations, (HL Rated), and is flame test rated FT-4.
10. Ampacities (Amps Per Cond.) are based on a 30°C ambient temperature according to the Canadian Electrical Code (Part 1).

## SHOP DRAWING

This review is solely for the verification of general design quality and does not alleviate the responsibility of the contractor for insuring that all specification, space and installation requirements are met.

Reviewed By: N.K. Reviewed ☒  
Reviewed as noted ☐  
Date: July 11, 2016 Resubmit ☐

CHIARELLI ENGINEERING LTD.

Power Cables for the Old Truck fill station  
from P-1 to PA-1

ARMORED POWER AND CONTROL CABLES

ANIXTER CATALOG NUMBER	SIZE AWG/MCM	GROUND COND. SIZE AWG	AMPACITY IN 30°C AMBIENT AIR *	APPROXIMATE DIAMETERS						NOMINAL WEIGHT			
				INNER JACKET		ARMOR		OUTER JACKET		ALUMINUM ARMOR		STEEL ARMOR	
				IN	MM	IN	MM	IN	MM	LBS/M FT	KG/KM	LBS/M FT	KG/KM
7TL-1404	14	14	15	0.505	12.83	0.705	17.91	.810	20.57	280	431	435	657
7TL-1204	12	14	20	0.580	14.73	0.780	19.81	.885	22.48	360	416	530	788
7TL-1004	10	12	30	0.640	16.26	0.840	21.34	.945	24.00	445	662	630	937
7TL-0804	8	10	45	0.710	18.03	0.910	23.11	1.02	25.91	560	833	750	1116
7TL-0604	6	8	65	0.880	22.35	1.08	27.43	1.19	30.23	840	1250	1160	1726
7TL-0404	4	8	85	1.01	25.65	1.21	30.73	1.32	33.53	1140	1696	1500	2232
7TL-0304	3	6	105	1.10	37.94	1.30	33.02	1.41	35.81	1360	2008	1740	2589
7TL-0204	2	6	120	1.16	29.46	1.36	34.54	1.47	37.34	1560	2321	1860	2916
7TL-0104	1	6	140	1.32	33.53	1.52	38.61	1.65	41.91	1940	2886	2400	3571
7TL-1014	1/0	6	155	1.41	35.81	1.61	40.89	1.74	44.20	2300	3422	2750	4092
7TL-2024	2/0	6	185	1.51	38.35	1.76	44.70	1.89	48.01	2750	4092	3350	4984
7TL-3034	3/0	4	210	1.63	41.40	1.88	47.75	2.02	51.31	3350	4984	4000	5952
7TL-4044	4/0	4	235	1.81	45.97	2.06	52.32	2.20	55.85	4150	6175	4950	7365
7TL-2504	250	4	265	1.98	50.29	2.24	56.90	2.38	60.45	4800	7142	5700	8481
7TL-3004	300	4	295	2.12	53.85	2.36	59.94	2.52	64.01	5600	8332	6500	9672
7TL-3504	350	3	325	2.22	56.39	2.48	62.99	2.64	67.06	6400	9523	7300	10862
7TL-4004	400	3	345	2.32	58.93	2.58	65.53	2.74	69.60	7100	10564	8100	12052
7TL-5004	500	3	395	2.52	64.01	2.78	70.10	2.92	74.17	8500	12648	9600	14284
7TL-6004	600	2	455	2.72	69.09	2.96	75.18	3.12	79.25	9900	14731	11200	16665
7TL-7504	750	2	500	3.00	76.20	3.26	82.80	3.44	87.38	12400	18451	13600	20236
7TL-10004	1000	1	585	3.28	83.31	3.62	91.95	3.80	96.52	15800	23510	17200	25593
7TL-12504	1250	1/0	645	3.92	99.57	4.8	106.17	4.36	107.4	19600	29164	31500	31992

\*Where fourth conductor is the neutral of a three-phase, four wire system, otherwise 80% of these values - CSA C22.1 Rule 4-004(3).

NOTE: After Anixter number use "SJ" for steel, "AJ" for aluminum.