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INSTALLATION AND OPERATION MANUAL FOR

EUROPLEX
APLEX MODEL 3100E8

100-ZONE, 8-PARTITION
SUBSCRIBER'S CONTROL PANEL

REVISED: APRIL 2000
FIRMWARE: A8E250/L8100E66

CONTENTS

GENERAL INFORMATION

The APLEX Model 3100E8 is a microprocessor-based, subscriber's control panel that can monitor a maximum of 100 zones, all of which are connected via a 3-conductor, multiplex cable up to 2 km in length. The special feature of the Model 3100E8 is that it allows the premises to be partitioned into eight areas or sectors, each area or sector having its own group of users with their own arming and disarming capabilities. An added feature allows an extra area called the common area (e.g., a lobby or a cafeteria) to be monitored in conjunction with the main areas. The common area will arm when all areas are armed and will disarm at the same time as any one individual area is disarmed. In addition, an alarm log is maintained showing date, time, and event descriptions of the last 600 events.

Areas 1 through 8 and the common area each have an instant-acting, intrusion zone type. Areas 1 through 4 and the common area each have an exit/entry zone type with an independent timer; and areas 1 and 2 each have a follower zone type. All areas have two C-LEM outputs, one for indicating "area armed" and the other for indicating "area intrusion". These may be connected to a dialler for off-site monitoring or to a LED display for local graphic annunciation. Areas 1 through 4 also have a C-LEM output to allow for a remote exit/entry buzzer.

The APLEX Model 3100E8 control panel accommodates one Master user code, one Service user code, and up to 248 general user codes. The user's name can be entered and will be printed with the log output. The extent of access to the system for each general user is determined by the Master user who selects, from a list, the options allowed the general user. Control of any of the eight areas can be assigned to any of the 248 general users on the system. In addition, selected users may also arm or disarm **all** areas simultaneously by selecting the FULL ARM key or the FULL DISARM key. If the panel is not centrally located, Model 3220/ 3230/3240 remote keypads may be installed to allow arming and disarming within an individual area.

The system has 42 pre-assigned outputs, the first 7 of which are available directly from the panel and the remaining 35 from C-LEMs or COMBO LEMs.

This manual describes the installation and operation of the APLEX Model 3100E8 with firmware version A8E250/L8100E67. If you are presently using an earlier version of firmware, you may obtain an update. Contact the factory for further assistance. Firmware version numbers are displayed in two parts. The first part identifies the operating programme version (e.g., A8E250) and the second part identifies the literal file (e.g., L8100E66).

☞ **Note:** The ☞ icon in the margin signifies a new function or option or one that has changed from the previous manual.

KEYBOARD AND KEYBOARD SECURITY

An important feature of the APLEX control panel is the membrane keyboard on the cabinet exterior. The user can enter a letter, character, number, or one of many important functions or

modes directly into the system. There are 20 keys on the keyboard, 19 of which have 3 letters, characters, or numbers. This allows for 57 different selections on the keyboard, plus 5 predefined operating modes (e.g., fully armed, part armed, etc.).

Special attention has been given to prevent unauthorized access to the panel via the keyboard. If one or two incorrect codes or function or mode selections are entered, the message **** INVALID ENTRY **** will be displayed each time and no action will be taken. As well, if 90 seconds elapse after the start of the first or second incorrect attempt, the display will show **CODE ENTRY TIME-OUT**. If an entry is not completed within that 90-second period, it will also be counted as an incorrect entry and the display will show **CODE ENTRY TIME-OUT**. On the third incorrect attempt, the alert message ***ID SECURITY ALERT*** will be displayed and a full alarm will occur if the system is in the fully armed mode. The incorrect-entry counter is reset after a valid code, function, or mode is entered.

CABINET

The metal cabinet is made from 18-gauge sheet steel. The door is hinged on the left and secured at the right with two fixing screws. A terminal-strip identification label on the inside of the door provides a quick reference for the installer or serviceperson.

MODULES

Model 1020 Dual Line Encoder Modules (D-LEMs), Model 1024 Quad Line Encoder Modules (Q-LEMs), Model 1101 Command Line Encoder Modules (C-LEMs), and Model 1121 and 1166 Combination Line Encoder Modules (COMBO LEMs) may be placed in any order at any position on the network. No remote power is required by the D-LEMs or Q-LEMs; however, **the APLEX 12-volt DC auxiliary power must be used to power the C-LEMs and COMBO LEMs,** and may also be used to power other devices such as PIRs. If you are using D-LEMs and/or Q-LEMs mixed with COMBO LEMs and/or C-LEMs, we recommend **two runs of 22-gauge, "telephone-style" quad wire** (one quad supplying LEM data and the other quad **parallelled** to supply 12-volt DC power). The network of D-LEMs, Q-LEMs, and COMBO LEMs is scanned twice in one second to determine if any changes have occurred. This double pass minimizes the effect of external interference from lightning, static electricity, and inductive load switching (e.g., motors, fluorescent lamps, etc.).

When choosing a location for the LEMs, avoid any areas exposed to **condensation** (e.g., where snow or rain could enter around doors, windows, eaves, or attics; steam tables in restaurants; etc.). Condensing moisture of any amount will cause tamper or disconnect alarms to be created. If a LEM has to be in such an environment, then **it must be installed in a weatherproof housing.**

KEYBOARD

An important feature of the APLEX control panel is the 20-key alphanumeric keyboard. In addition to the numbers 0 to 9, special keys allow access to certain functions and modes, as well as accessing letters and characters of the alphabet. These special keys are described below in the normal **non-shifted** mode:

A ! YES →	Used to acknowledge YES to an alarm condition or to confirm an option as displayed. Also causes the cursor to FORWARDSPACE.
B : NO X	Used to acknowledge NO to an alarm condition, to reject an option as displayed, or to eXit the current function. Also the letter "X".
C . FULL DISARM +	Selects DISARM mode or increments a value. Also the character "+".
D , AUDIBLE SILENCE 1 -	Selects AUDIBLE SILENCE 1 mode or decrements a value. Also the character "-".
E ' AUDIBLE SILENCE 2 *	Selects AUDIBLE SILENCE 2 mode. Also the character "*".
F G FULL ARM /	Selects FULL ARM mode. Also the character "/".
H ? HELP =	Provides HELP by listing the available options. Also the character "=".
SHIFT/ DELETE	SHIFTS all keys to the letter or character at the upper left or upper right, or the character or number below as indicated by the position of the cursor (∧). When pressed continuously, it will DELETE characters.
U V ← ␣(SPACE) %	Causes the cursor to BACKSPACE.
RETURN	Completes an entry; ends a description; etc. Same as carriage RETURN on a typewriter. (The upper left character is a space bar.)

KEYBOARD cont.

The keys described above will be referred to in this manual by the names shown in the left-hand column on the previous page. The cursor is normally a flashing /\ symbol. In normal operation, when the cursor is pointing up, the number or phrase in the centre of a key is chosen when that key is pressed. If the SHIFT/DELETE key (generally referred to as the SHIFT key) is pressed once, the cursor changes to a < symbol and the upper, left-hand letter or character of each key is available. For example, in the case of the NO key, this is a "B" and, in the case of the RETURN key, it is a space, designated by the space bar symbol. This cursor mode is called LEFT SHIFT. Pressing the SHIFT key a second time will change the cursor to a > symbol and the upper, right-hand letter or character is then available. This is a ":" in the case of the NO key and "%" in the case of the RETURN key. This cursor mode is called RIGHT SHIFT. Pressing the SHIFT key again will return the cursor to a /\ symbol and each key will have its original meaning. In text- entry mode, when the cursor is pointing up, the bottom character on non-numeric keys (e.g., +) becomes available instead of the operating phrase (e.g., FULL DISARM). If you examine the layout of the keys, you will see that the letters used most often are available in left shift. This is convenient for zone-description entry as most descriptions can be completed without having to shift between characters. Because the keyboard has non-tactile keys, an audible feedback (a short beep from the piezo-sounder) confirms each operation of a key.

All keys have an auto-repeat capability. If a key is pressed for longer than one second, the panel will generate about four duplicate characters a second until the key is released. The SHIFT key operates differently. If pressed for longer than one second, it will **delete** characters at about half the normal repeat rate. This is used when editing to delete errors made during zone-description entries, name entries, etc. **To correct an error,** ensure that the flashing cursor is pointing up. Press the BACKSPACE (←) key to position the cursor over the error. Press and hold the SHIFT key to delete the incorrect character or characters, reposition the cursor and enter the correct character or characters (these will appear on the display, automatically moving the rest of the entry to the right), and use the YES key (in normal shift) to move the cursor right (forward space) to continue.

To summarize the editing functions:

- BACKSPACE: Cursor in normal shift; press BACK SPace key.
- DELETE: Press and hold SHIFT/DELETE key.
- FORWARD SPACE: Cursor in normal shift; press YES key.
- SPACEMAN: Cursor in left shift; press RETURN key.

The keyboard, made from high-grade polycarbonate, is very durable and can easily be cleaned with a damp cloth. Although firmly attached with contact adhesive, the keyboard can be peeled off if it is damaged without having to replace the cabinet.

OPERATING CONVENTIONS

The following is a brief summary of how to select a function or mode, how to perform various functions, and how to exit from a selected function or mode.

FUNCTION OR MODE SELECTION

To execute *any* function or to select any mode on the panel, you need to do two things: first, identify yourself and, second, tell the panel what you want to do. To identify yourself, enter your four- or five-digit user code on the keypad. If you are using a four-digit code even though the five-digit option has been chosen (see SET IDS/OPTIONS, page 46), you must remember to press the RETURN key to complete the entry. For security reasons, the display will not show the numbers entered but instead will display a ***** for every digit. To tell the panel what you want to do, enter a single character or number corresponding to the function or mode required. If you are allowed access to this option, the entry will be accepted. If you do not know the command character for the function or mode you want, enter your user code and press the HELP key. The panel will list the options available to you.

ANSWERING A QUESTION

When the panel requires a yes or no reply to a question, it displays a flashing **?**. For example: **QUIT ?** - The panel is asking if you want to quit (exit) the present operating function or mode. To answer yes, press the YES key. To answer no, press the NO key.

ENTERING A NUMBER

When the panel requires a numeric entry, the display will usually indicate what is required. For example: **SHUNT ZONE 0** - A flashing cursor symbol indicates where the digits are to be placed. Type in the required number. If a number has been entered in error, press the BACKSPACE key to return the cursor to the incorrect number and then enter the correct number in its place. Press the RETURN key to complete the entry. To exit a numeric-entry routine without entering a number, simply press the NO key.

SUB-MENUS

Certain functions and modes display a flashing message showing three choices, each separated by dashes. In such cases, the required choice is selected by pressing the key directly under the word in the display. For example: **IDS--OPTIONS--NAMES** - Press the FULL DISARM key to select **IDS**, the AUDIBLE SILENCE 2 key to select **OPTIONS**, and the HELP key to select **NAMES**.

MESSAGES

Flashing alert messages (e.g., ***** FIRE ALARM *****) can only be removed by using the ACKNOWLEDGE ALARMS function (see page 40). WARNING messages (e.g., **AC POWER FAIL**) will disappear when the cause is removed.

INSTALLATION PLANNING GUIDE AND CHECKLIST

Installation of the system involves mounting and wiring the control panel, configuring the system, and finally performing a thorough system test. The various steps involved are outlined below.

First-time users are well advised to configure a simple system on the bench using one or two LEMs to become fully familiar with the operation of the APLEX control panel's features before attempting to install a system at a site.

1. MOUNT THE PANEL AND WIRE THE SYSTEM

Read the section on pages 8 and 9 describing the mounting of the panel and wiring of the system. This section contains important information concerning cable type and length, LEM location, and various other installation rules and restrictions.

2. INITIALIZE THE LEMS

When all the LEMs are connected and the wiring has been checked, you may now have the panel perform a check of the LEM line and a count of the number of zones (two per D-LEM or COMBO LEM or four per Q-LEM) that it sees responding. This process is referred to as LEM-LINE INITIALIZATION and is described on page 35. If the system shows **ILLEGAL LEM NUMBER,** or **ON-LINE 0 --> 0,** or something similar to **AREA-1 3 = 22**, then refer to page 36.

3. CHECK LEM ANALOGUE VALUES

Select the SERVICE MODE mode (see page 43) and then the SINGLE-ZONE MONITOR option. Check the analogue values for all inputs on the system. Refer to page 45 for details on the analogue values. If the analogue values are incorrect, refer to page 44 for help with trouble-shooting.

4. SET ZONE DESCRIPTIONS, ZONE TYPES, VARIABLES

Refer to page 47 and select the ASSIGN ZONES/VARIABLES function. This function allows a text description of each zone to be entered, allows each zone number to be assigned a zone type (e.g., EXIT-1, AREA-1, PANIC, etc.), and allows all the system variables to be set (e.g., Exit-1 Time, Bell Time, etc.).

5. SET USER IDENTIFICATION CODES, OPTIONS, NAMES

☞   The system can have up to 248 general users. Each user can be assigned an identification (ID) code and his or her name can be stored in the panel. In addition, every user can be assigned any number of system options, including arming, disarming, shunting, setting the time, etc. Refer to page 45 for details on this function.

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INSTALLATION PLANNING GUIDE AND CHECKLIST cont.

6

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6. SET THE NUMBER OF AREAS

The system can be partitioned into a maximum of eight areas. Each area is like a mini-panel and can be armed, disarmed, etc. See page 52 for details on this function.

7. ASSIGN AREAS TO USERS

After the number of areas is defined, assign the various areas to the users who are to be authorized to operate them. See page 52 for details on this function.

8. SET DATE AND TIME

Refer to page 58 for instructions on setting the date and time.

9. PRINT REPORTS

When the system is fully configured, a complete system report should be printed. This gives a full record of the installation and prints all variables, user options and names, a list of any program changes (literals), an on-line zone report (zone descriptions and types), and then the system log. It is important to produce two copies of this report, one for your own records and one for the customer. Refer to page 53 for further details.

10. WALKTEST THE ENTIRE SYSTEM

This test should be done with a printer connected to the panel. A printed record of the test will then be obtained and a copy may be given to the customer. The object of the walktest is to trip every zone on the system and to confirm that the panel receives the activation. Refer to the WALKTEST option in the SERVICE MODE mode on page 43 for further details.

11. CHECK SYSTEM OPERATION

The system may be connected to a central/monitoring station. In this case, the system should be armed, a zone tripped, and then the system disarmed. The central/monitoring station should be contacted to ensure that the relevant signals were received. If a dialler is used, all conditions being monitored should be activated (e.g., fire, holdup, etc.) to verify correct operation.

All system outputs being used, including C-LEMs and COMBO LEMs, should be tripped and reset to verify correct operation. Refer to the RELAY/C-LEM TEST function on page 52 for further details.

MOUNTING THE PANEL AND WIRING THE SYSTEM

Locate the panel in an area that has convenient access and then fasten the panel securely to a wall at about chest height. Six mounting holes are provided. The keyholes at the top allow initial positioning and levelling. The panel can then be secured at the remaining holes using suitable screws and anchors.

If a communicator module is required, it may be installed to the right of the printed circuit board or underneath it by using double-sided foam tape. If it is to be located underneath the main board, pre-wire the terminal screws of this module with 6- to 10-inch wires and preset any switches or install any EPROMs because the module will be hidden beneath the APLEX printed circuit board. To remove the APLEX printed circuit board from the panel, proceed as follows: First, unplug the keyboard connector. Avoid pulling it by the ribbon cable; **to loosen it correctly**, lever the blue connector plug to the left with a small, flat-blade screwdriver and then pull it free from the header pins. The printed circuit board is secured by six nylon mounts. Squeeze the out-flanged arm of each nylon mount with a pair of needle-nose pliers and gently pull up on the board. To remount the printed circuit board, gently press each clearance hole onto its nylon mount. To determine which outputs could be connected to the module, refer to the terminal-strip designation chart on page 10 and the relevant operational characteristics on pages 11 and 12.

LOCAL MULTIPLEX TELEMETRY CABLE (LMTC) - LEM LINE

The APLEX Model 3100E8 requires the addition of a Local Multiplex Telemetry Cable (LMTC), more commonly known as a LEM line, and, to obtain the maximum of 100 zones, the instal-lation of either up to 50 D-LEMs (old designation is A-LEM) or COMBO LEMs or, alternative-ly, two D-LEMs or COMBO LEMs and 24 Q-LEMs. The LMTC requires only **three** conductors for proper operation. C-LEMs, COMBO LEMs, and Model 3220/3230/3240 remote keypads require an extra source of DC power in addition to the LEM-line connection. Normally, two "telephone-style" quad wires or a 6-conductor, mixed-gauge cable should be used. One quad wire is used for LEM signals, while the second quad wire or the extra conductors in the multi-cable can be used to supply auxiliary DC power from the panel. This auxiliary power source **must be used** to operate the C-LEMs and/or COMBO LEMs, and may be used to supply DC power to operate PIRs, etc. The extra conductors in the multi-cable **must not** be used for AC power or for DC power to disruptive loads like mechanical bells or strobe lights. A network of up to 2 km of **unshielded cable**, consisting of the trunk cable connecting the panel to the furthest LEM and

☞ *including the length of the single longest zone loop*, can be supported. **It is good practice to double up the LEM ground (-ve) wire**. Connect the spare fourth wire in parallel with the wire selected as LEM negative to reduce the resistance value. **THIS PRACTICE IS MANDATORY IN LARGE SYSTEMS TO ALLOW PROPER INITIALIZATION OF THE ZONES!!** If shielded cable is used, only about half the length of LEM-line cable can be installed because of excess **cable capacitance**.

WIRING

Zones 1 through 100 are connected using D-LEMs, Q-LEMs, or COMBO LEMs. Determine whether it is more economical to install D-LEMs or Q-LEMs given the number of zones required versus the cost of either LEM unit. Note that the lowest address Q-LEM services zones 3, 4, 5, and 6 and the highest address Q-LEM services zones 95, 96, 97, and 98 (See page 27). You must, therefore, use D-LEMs for zones 1 and 2 and zones 99 and 100 (See page 25). Connect the APLEX panel terminals 25 (LEM negative), 26 (LEM Clock), and 27 (LEM Data) to terminals 1, 3, and 4 respectively of the first LEM. Connect 9, 11, and 12 of this LEM to 1, 3, and 4 of the next LEM and so on. Refer to page 13 for a drawing of how a door contact, PIR, etc., is wired to a zone input.

For additional wiring information, refer to page 13 for the D-LEM, page 23 for the C-LEM, pages 21 and 22 for the Q-LEMs, and page 25 for the COMBO LEM. Ensure that all covers are installed on the LEMs to close the tampers. Connect a 16- to 18-volt, 30-va minimum transformer to terminals 34 and 35. Connect a 12-volt, 6-AHr minimum, standby battery to the flexible leads provided. **WATCH POLARITY!!** Connect the red lead to the standby battery positive (+ve) post and the black lead to the battery negative (-ve) post. At this time, the panel will automatically start up and will probably stop when the display shows   **ENTER NAME/ ADDRESS ?**. You may now proceed with the powering up of the panel. Refer to page 35.

SERVICING THE PRINTED CIRCUIT BOARD

To remove the printed circuit board for service, disconnect the AC source from terminals 34 or 35, disconnect a battery lead from the standby battery and then carefully lever up each terminal strip with a thin, flat-blade screwdriver. Remember **always** to remove the power from terminals 34 or 35 and a battery lead and before attempting to lever off terminal strip 3. Do not unplug the keyboard connector by pulling it by the ribbon cable. **To loosen it correctly**, lever the blue connector plug to the left with a small, flat-blade screwdriver and then pull it free from the header pins. The printed circuit board is secured by six nylon mounts. Squeeze the out-flanged arm of each nylon mount with a pair of needle-nose pliers and gently pull up on the board. To remount the printed circuit board, gently press each clearance hole on its nylon mount, push the blue connector plug onto the 9-pin header, and then squeeze the 12-pin terminal strips back onto the header pins.

TERMINAL CONNECTIONS

TERMINAL	OPERATION/FUNCTION	
1	Remote Buzzer -ve Switch	
2	+12 VDC (Fused at 1.25 amp, Fuse F2)	
3	Spare No Connection	
4	Spare No Connection	
5	Spare No Connection	
6	Spare No Connection	
7	Relay 7 N/O	Contact Rating: 2A, 24VDC
8	Relay 7 Common (Timed Bell Cut-off)	Resistive Load
9	Relay 7 N/C	
10	Relay 2 N/O	Contact Rating: 2A, 24VDC
11	Relay 2 Common (Fire Alarm)	Resistive Load
12	Relay 2 N/C	
13	Relay 1 N/C	Contact Rating: 2A, 24VDC
14	Relay 1 Common (Intrusion Output)	Resistive Load
15	Relay 1 N/O	
16	Aux. 4 Input (Cabinet Back Tamper N/O) **Affects keyboard!**	
17	Aux. 4 Common	
18	**DO NOT USE.**	
19	Output 3 +ve Switch (Clear to Arm)	
20	0 VDC (-ve)	
21	Output 4 +ve Switch (System Armed)	
22	Output 5 +ve Switch (Fire Trouble)	
23	0 VDC (-ve)	
24	Output 6 +ve Switch (System Fault)	
25	LEM-Line -ve **Do not use as -ve for anything else!**	
26	LEM-Line Clock	
27	LEM-Line Data	
28	0 VDC (Power -ve)	
29	0 VDC (Power -ve)	
30	Standby Battery -ve (Black wire)	
31	Standby Battery +ve (Red wire, Fuse F1, 13.5-13.8 VDC)	
32	12 VDC Aux. Power +ve (Fuse F2)	
33	12 VDC Aux. Power +ve (Fuse F2)	
34	AC Input (16 VAC, 30 VA)	
35	AC Input (16 VAC, 30 VA)	
36	Earth/Water-Pipe Ground	
Comms Terminal Strip	**Reads bottom up.** (J Strip designations refers to MK3/MK2 PCB)	
40/J24/J26	RX Data (Default DVACS = 150 Baud, 8 Data bits, Even parity)	
39/J23/J25	TX Data (Default DVACS = 150 Baud, 8 Data bits, Even parity)	
38/J22/J22	+12 VDC (Not fused, Direct connect to bat. +ve!!)	
37/J21/J21	-ve (Signal ground)	

NOTES CONCERNING THE TERMINAL CONNECTIONS

Terminal 1 is a switched-negative output. Whenever the panel piezo-sounder is beeping, a quad Darlington-transistor integrated circuit (ULN 2004) switches to **negative** any load (remote buzzer, lamp, relay, etc.) connected to these terminals. To prevent the failure of this transistor switch, a 27-ohm, 2-watt current-limiting resistor is connected in series with this terminal. Should a short circuit occur in the load connected to terminal 1, all of the supply voltage is developed across this resistor, protecting the transistor switch. As a result, the useful amount of current available to operate the buzzer, lamp, relay, etc., is limited to approximately 100 ma. Terminal 2 is a convenient, fused, 12-volt DC source that can be used to provide positive power for the buzzer, lamp, relay, etc.

Terminals 3, 4, 5, and 6 are not used.

Terminals 7 through 15 are standard Form C contact relays with a 2-amp, 24-volt DC resistive load rating.

Terminals 16 and 17 can be used, only if necessary, to connect a normally open back tamper switch to detect removal of the panel from the wall. This input, when operated, affects the keyboard! **Do not extend wiring leads from the panel!**

Terminal 18 is not used.

Terminals 19, 21, 22, and 24 are switched-positive outputs. Similar to the action of terminal 1 above, a type 54563 Darlington-transistor integrated circuit will switch **+12 VDC**, therefore sourcing power to a load. As above, in series with each of these terminal screws there are 27-ohm 2-watt resistors to limit the current to approximately 100 ma. If the load requires more current, the output voltage will drop below 10 volts. Note that in the older MKII printed circuit board, a "pull-up" resistor is connect from 5-VDC to each output terminal screw. In the 'off-state' of the 54563 switch, the output voltage will 'float' at 5 VDC. If the load has low resistance (e.g., an incandescent lamp or a relay coil) the load will 'pull down' this floating voltage close to 0 volts. If the load has a moderate to high resistance, (e.g., a dialler module input or a LED), then, in the off state of a switch, the outputs will again 'float' around 5 VDC. This can cause the dialler to false trip or the LED to glow. To reduce the floating voltage, install a 360-ohm "pull-down" resistor between the appropriate output terminals and a convenient negative terminal. These "pull-up" resistors are not used on the MK3 and MK4 PBS and therefore the "pull-down" resistors are not necessary.

Terminal 25 is the LMTC (LEM-line) ground (-ve) and **must not be used as a ground (-ve) return** for any other applications. An excessive voltage drop (millivolts) could result, thereby causing the LEM data to be incorrectly decoded.

Terminal 26 is the LMTC (LEM-line) clock line providing a continuous train of nominally 9-volt
NOTES CONCERNING THE TERMINAL CONNECTIONS cont.

square waves for use by the LEMs.

Terminal 27 is the LMTC (LEM-line) data line returning a series of nominally 6-volt pulses from the LEMs to be decoded by the panel.

Terminals 30 and 31 are used to connect the standby battery negative and positive respectively. Flexible wires terminated with Faston lugs have been provided. Connect the red lead to the positive (+ve) post and the black lead to the negative (-ve) post. **Watch the polarity. A zener diode on the panel will fail short circuit if the polarity is reversed! No extra chances!!**

Terminals 32 and 33 provide an auxiliary 12 volts (actually 13.6 volts) DC, fused at 1.25 amp (Fuse 2), used for powering C-LEMs, remote keypads, PIRs, glass breaks, etc. Should this fuse fail in service, we recommend replacing it with a 2.0-amp fuse. You may obtain a package of five fuses by ordering product code 3310 from your distributor or from electrical retailers carrying the BUSSMAN or LITTLEFUSE line (BUSS product code GMA 2 or LITTLEFUSE 211.2). **Note:** The ULC listing for the APLEX panel is based on the operation of the standby battery for 24 hours. This condition is met when a suitable battery is used. See the chart below to determine the required battery capacity. If you use the auxiliary power terminals, the standby battery capacity must be increased to provide for the extra load current.

Terminals 34 and 35 are used to connect a 16- to 18-volt AC, 37-va minimum transformer.

☞   Terminal 36 **must be connected** to a cold-water pipe or Hydro ground using a heavy-gauge wire (18 ga. or 16 ga.) routed over the shortest possible distance. **A solid, direct connection is essential for effective operation of the lightning-protection devices on the printed circuit board.**

COMMS TERMINAL STRIP/J TERMINAL STRIP - MK4/MK3/MK2 PBS

The Comms terminal strip, or J terminal strip as it was designated on earlier revisions, is used for telecommunications. **Please notice that it reads from the bottom up**.

Terminal 37/J21/J21 is a signal ground (-ve). Connect this terminal to pin 7 on a serial-input printer.

Terminal 38/J22/J22 supplies +12 volts DC to power other serial devices, auto-dial modems, etc. **This terminal is connected directly to the positive battery and is not fused. Short circuits on this terminal will rupture tracks on the printed circuit board. If extending the wiring beyond the panel, you must install some type of fusible link.**

Terminal 39/J23/J25 is the transmit line for serial ASCII data and connects to pin 3 (Rx data) of a serial-input printer. It is not true RS-232C, as this line is not held to a negative level in the absence of data. If true RS-232C is required, then a EUROPLEX Model 1405 RS-232C adapter

NOTES CONCERNING THE TERMINAL CONNECTIONS cont.

must be used.

Terminal 40/J24/J26 is the receive line for incoming data [e.g., DVACS[tm], auto-dial modem, etc.]. In non-polled applications (e.g., logging printer), this terminal is used as a handshake line. Connect this terminal to a pin that will supply positive voltage when your printer is on line (e.g., pin 4, 11, or 20 of the connector). Consult your printer manual. **If the handshake line from the printer is not used**, connect a 2,200-ohm resistor from terminals 38/J22/J22 to 40/J24/J26; otherwise actions such as arming and disarming will not be printed. This handshake is not required for system log or report printing.

The following chart may be used to determine the standby battery requirements for the APLEX control panel:

Product	Current Draw from 12-Volt Battery	Amp-Hour Battery Requirements for 24-Hour Standby
3100E8 Panel-Armed Mode	0.1 amp	2.4 amp-hr.
3220 Keypad (Display On)	0.25 amp	6.0 amp-hr.
3220 Keypad (Display Off)	0.045 amp	1.0 amp-hr.
1224 Convertor + **L1** Subset	0.3 amp	7.2 amp-hr.
List 3 Subset (No 1224 needed)	0.040 amp	1.0 amp-hr.
Typical PIR	0.04 amp each unit	1.0 amp-hr.

For example: A 3100E8 panel plus one 1224 convertor and two PIRs requires 2.4+7.2+2(1.0)=11.6 amp-hr. standby. This system requires a minimum of two 6.5 amp-hr. batteries wired in parallel. A 3100E8 panel plus one F1F2 List 3 subset and one 3220 keypad with display off (closed/armed period) requires 2.4+1.0+1.0=4.4 amp-hr. In this case, one 7.5 amp-hr. battery would be sufficient.

MODEL 1020 DUAL LEM (D-LEM)

The Model 1020 Dual Line Encoder Module (D-LEM) is used to multiplex two devices (e.g., a door contact, a PIR, etc.) onto the LEM line. The LEM operates in an analogue mode allowing the APLEX control panel to measure the signal amplitude from a zone, compare it with a preset value, and therefore determine whether the particular zone is open (Alarm), closed (Restored), disconnected (LEM-cover tamper switch open or Break in loop wiring) or shorted (Cross in loop wiring). Transorbs and "spark-gap" staggered traces on each LEM printed circuit board protect against lightning and induced voltage transients on the LEM line.

1020 DUAL LEM
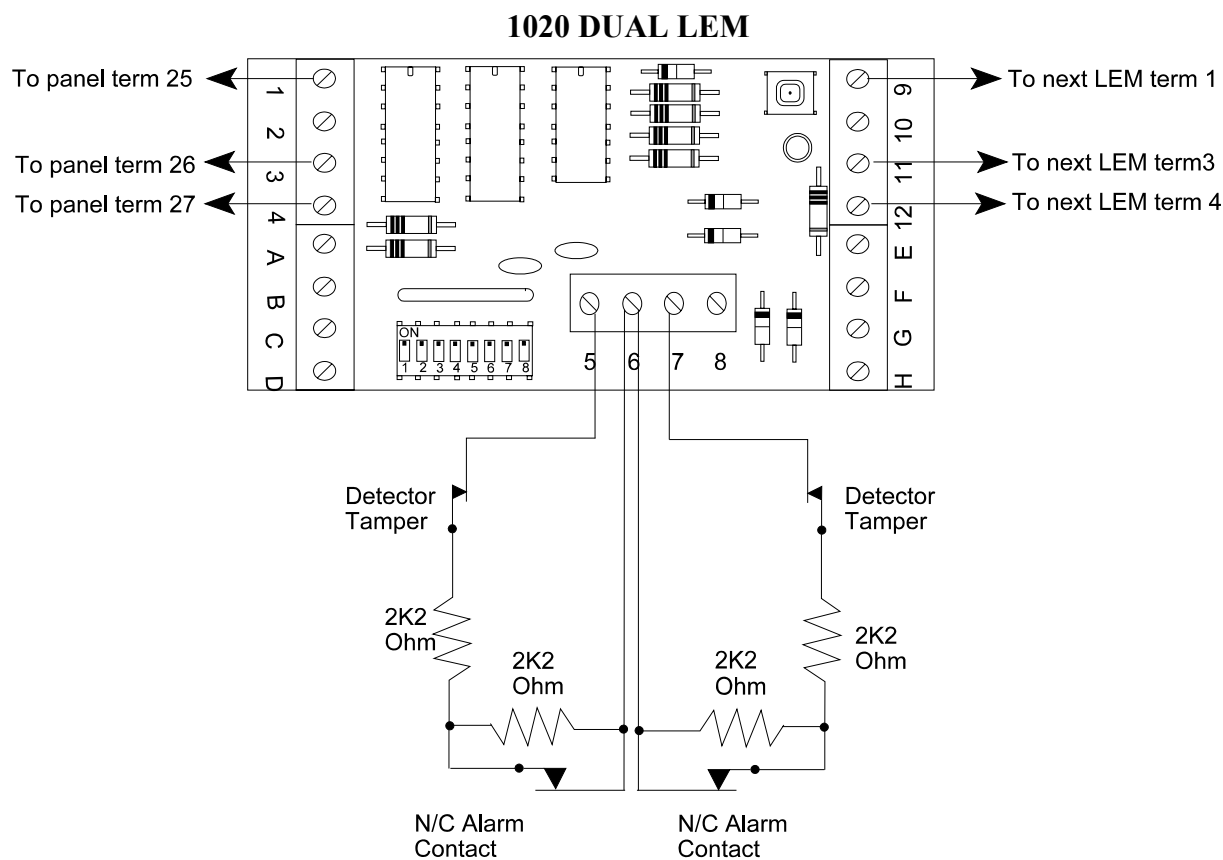
The three LEM-line conductors used by the D-LEM are designated LEM NEGATIVE (use black, if available), LEM CLOCK (use yellow), and LEM DATA (use green). **It is good practice to *parallel* the black wire with the red wire to provide a heavier negative return. ON VERY LARGE SYSTEMS WITH LONG WIRE RUNS, THIS DOUBLING OF THE NEGATIVE RETURN IS ABSOLUTELY NECESSARY!! By convention only**, these colours are connected **in** to terminals 1, 3, and 4 respectively on the left side of the D-LEM and **out** to terminals 9, 11, and 12 on the right side of the D-LEM. The D-LEM tracking provides continuity through the printed circuit board. This cable may be branched at any point by connecting it in parallel with the main cable.

The D-LEMs may be placed in any order and in any position on the cable. There is no restriction on the distance between D-LEMs. The end of the cable does not need to be looped back to the control unit; however, if convenient, you may install a "round-robin" LEM line terminated back again in the APLEX control panel. This will allow continuous operation of the system with a single break in the LEM line and easier trouble-shooting for service personnel.

MODEL 1020 D-LEM CODING

The Model 1020 D-LEM is addressed by coding the Dual-in-Line (DIL) switch on the printed circuit board. There are eight individual numbered switches. In the up or ON position (towards the centre of the PCB), each switch number has a value zero (0); in the down or OFF position (towards the edge of the PCB), each switch number has a different decimal value. The decimal value is displayed in the chart below:

Switch No.: 1   2   3   4   5 6 7 8   ON = 0, OFF = Dec. Value
Decimal Value: 128 64 32 16 8 4 2 1

The sum of the decimal value for all switches in the down (OFF) position is the address for that D-LEM unit (e.g., Switch numbers 6 and 8 down would be address 5; i.e., 4 + 1).

There are two zone inputs per D-LEM unit; therefore, the **zone number** is calculated as follows:

ODD NO. Zone (input terminals 7 & 6) = (LEM address value x 2)-1
EVEN NO. Zone (input terminals 5 & 6) = LEM address value x 2

For example: The D-LEM unit above, coded to **address** 5, monitors **zone inputs** 9 and 10. The tamper micro switch on the D-LEM printed circuit board is in series with the **even-numbered zone input**, in this case, zone 10. If the zone is on line and the tamper is opened, a disconnect signal will be received by the panel. The APLEX panel will display **AREA-1 10 DISCON**. On initialization, the system will only recognize inputs that are **not** in the disconnect state (i.e., input loops with continuity); therefore, be sure that the covers are on the D-LEM units if the even-numbered zones are expected to function.

IMPORTANT NOTES:

1. No two D-LEM units may have the same address on the system. There is just one exception to this rule. If only one zone input is used on one D-LEM unit (say, zone 12 using terminals 5 to 6), leaving the second zone input open circuited, then the second zone input (say, zone 11 using terminals 6 to 7) may be used on the other identically addressed D-LEM unit, leaving its first input open circuited.

MODEL 1020 DUAL LEM (D-LEM) cont.

2. The coding table on page 26 shows the DIL switch settings for D-LEMs, C-LEMs, and COMBO LEMs. (Refer to page 23 for information on C-LEMs.) The maximum useable zone number, 100, comes from D-LEM address 50. The chart reflects this with the notation **LIMIT of 3100**. The table also shows C-LEM address 50 as this is the highest useable C-LEM/COMBO LEM address.

3. The coding table on page 27 shows the DIL switch settings for Q-LEMs. (Refer to pages 21 and 22 for information on Q-LEMs.) The minimum useable quad address of 2 provides for zones 3, 4, 5, and 6. A D-LEM must be used to provide for zones 1 and 2. The maximum useable quad zone number, 98, comes from a Q-LEM address of 48. The chart reflects this with the notation **LIMIT of 3100**. A D-LEM must be used to provide for zones 99 and 100.

LOOP-WIRING CONFIGURATIONS

Each Model 1020 D-LEM provides for two separate zone input loops to be connected. Effective mid-1995, for ULC-listed installations using 2 EOL resistor loops, you may use a Form B (SPST-NC) contact, connected in parallel with one of the two resistors. A *short across the loop* will result in a tamper alarm, a *break in the loop* in a disconnect alarm, and operation of the Form B contact (*open across one resistor*) in a general alarm. Each 2 EOL loop must have two 2,200-ohm (red-red-red) resistors in series with the loop and the normally closed alarm contacts are connected across one of the resistors. In the case of motion sensors, etc., the tamper contacts are connected in series with the loop.

Circuit Wiring for ULC or Non-ULC Listed Installations

The above circuit wiring is easily implemented in a standard QBB block that may be installed close to the detector.
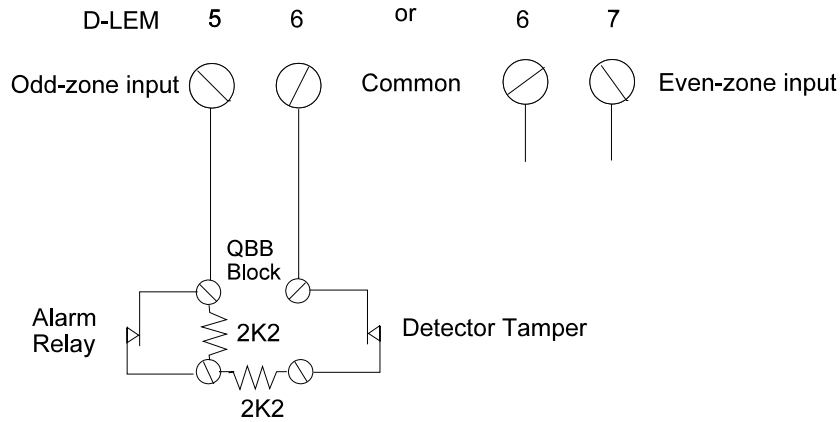
Connection inside an intrusion detector is even simpler:

17

Circuit Wiring for Non-ULC Listed Installations

Note that the following wiring method is **not suitable for ULC-listed installations**! If a number of doors, windows, etc., are to be connected in series to an input, then wire as follows:

| 5 | 6 | or | 6 | 7 |

Odd-zone input   Common   Even-zone input

QBB
Block

2K2   2K2

Door 1   Door 2   Door 3
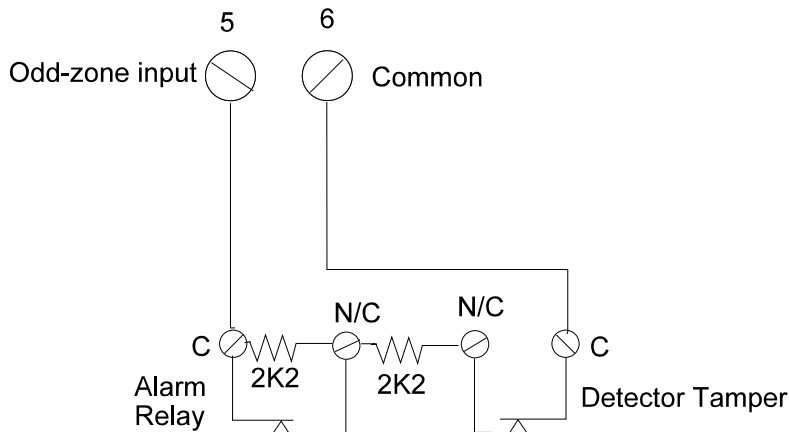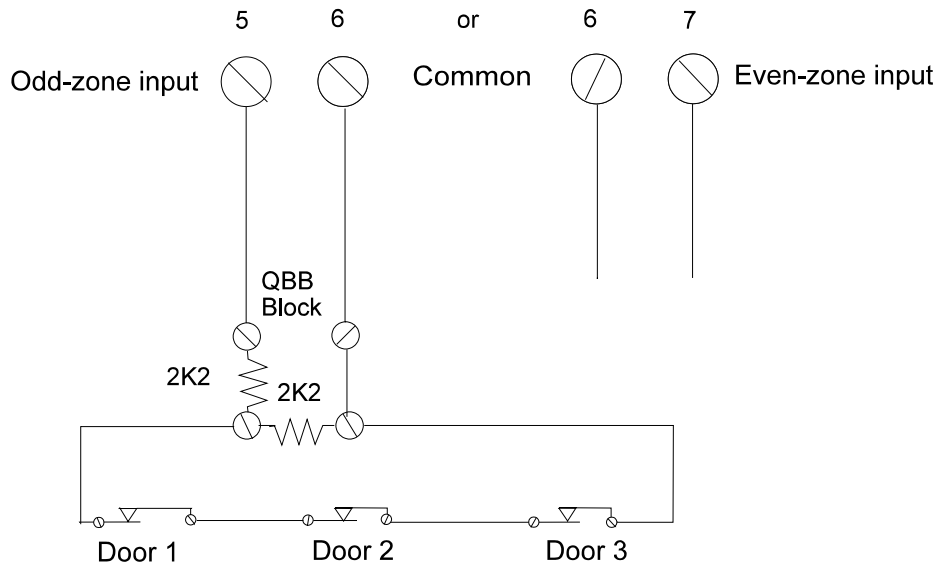
LOOP-WIRING CONFIGURATIONS cont.

Circuit Wiring for ULC-Listed Installations

Use Form C contacts and 4,300-ohm (yellow-orange-red) resistors to provide an alternate supervised connection for ULC-listed central/monitoring station installations.
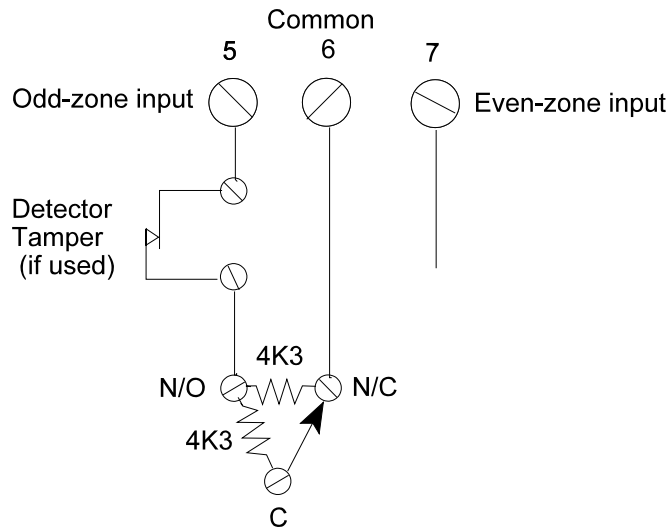
To series-connect two Form C devices, one with a detector cover tamper and one without, install the 4K3-ohm resistors in the first and second devices as follows:

Circuit Wiring for ULC-Listed Installations cont.

To series-connect three or more Form C devices, install the 4K3-ohm resistors in the first and last contacts as shown below. Pay close attention to the wiring as an interchange will cause a zone tamper alarm (a short on the loop).
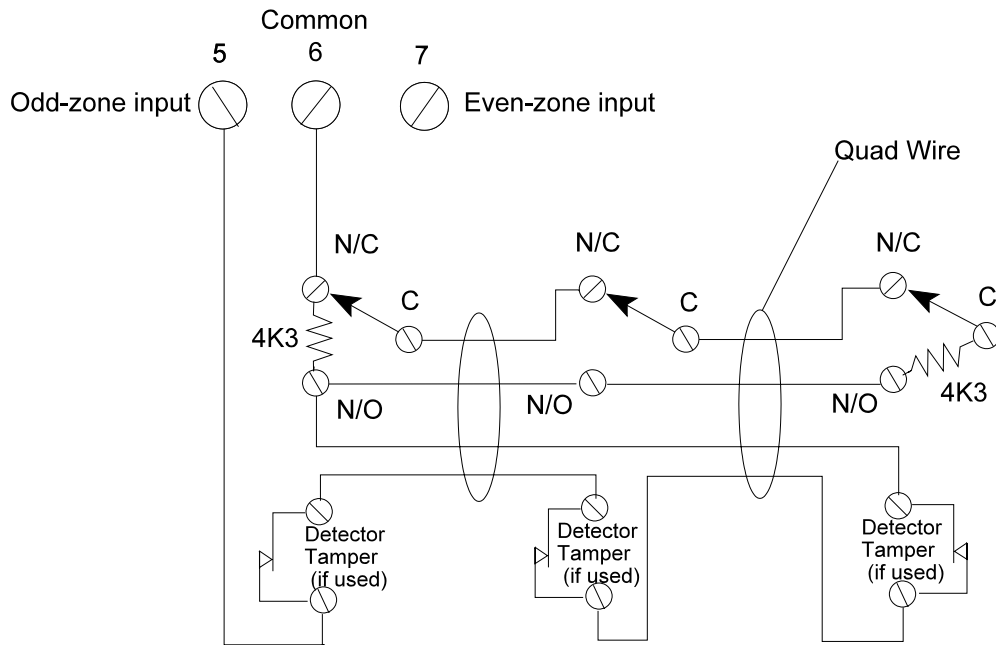
To connect a normally open, fire-detector circuit, install one 2K2-ohm resistor in the last detector or after the last detector using an EOL plate:
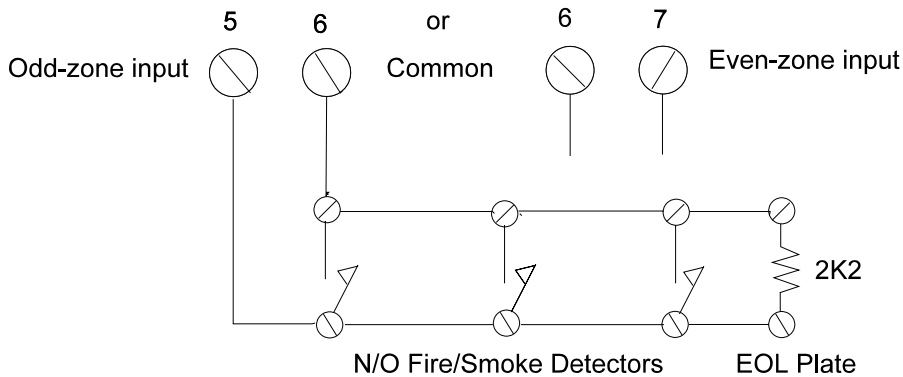
M   **ODEL**

1024 REV 1.0 QUAD LEM (Q-LEM)

The Model 1024 Rev 1.0 Quad Line Encoder Module (Q-LEM) features four input-loop connections and a tamper switch that can either be active or be shunted by switch number 8 on the DIL switch. The Q-LEM can be connected anywhere along the LEM line and the terminal connections are similar to those of the D-LEM except that the "in" and "out" connections are both made on the left-hand terminal strip only.
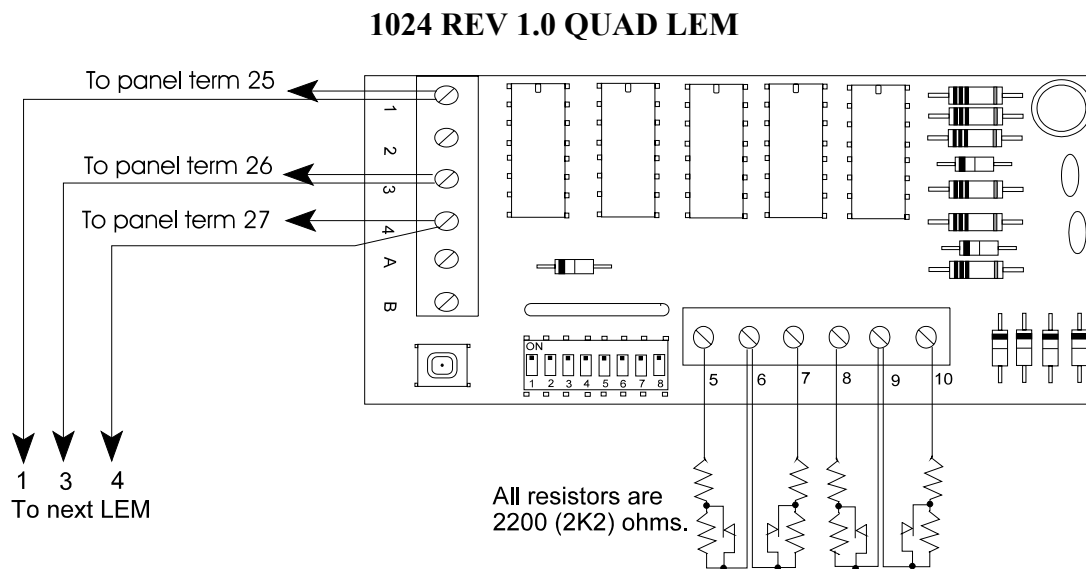
1024 REV 1.0 QUAD LEM

The DIL switch settings establish the address of the Q-LEM. **Only switches 1 through 7** are used. Switch number 8 controls the tamper switch. When switch number 8 is OFF, the tamper switch is in series with zone input A (terminal 5); therefore, on a Q-LEM cover tamper alarm, the panel will display a **DISCON** for zone A. The general formula for determining the zone numbers from the address (decimal) value is the following:

Zone A   Terminal 5 = (Address Value x 2)
Zone B   Terminal 7 = (Address Value x 2)-1
Zone C   Terminal 8 = (Address Value x 2)+2
Zone D   Terminal 10 = (Address Value x 2)+1

The coding table on page 27 may be used to determine the switch settings.

MODEL 1024 REV 2.1 QUAD LEM (Q-LEM)

The Model 1024 Rev 2.1 Quad Line Encoder Module (Q-LEM) features four input-loop connections and a tamper switch that can either be active or be shunted by switch number 8 on the DIL switch. The Q-LEM can be connected anywhere along the LEM line, and the terminal connections are similar to those of the D-LEM. The Rev 2.1 printed circuit board features an LMTC (LEM-line) terminal strip on the right-hand side and a more secure tamper switch. Notice that the terminals on the right-hand strip are designated 7 through D. **Do not confuse them with the terminals designated 5 through 10 on the earlier ISS. 1 printed circuit board**.

1024 REV. 2.1 QUAD LEM
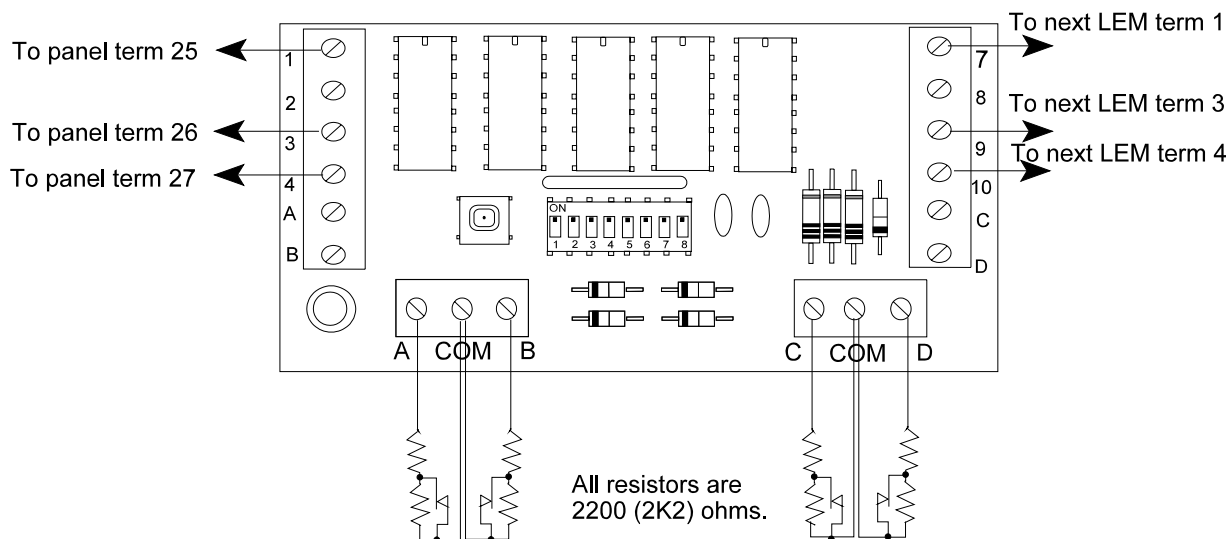
The DIL switch settings establish the address of the Q-LEM. **Only switches 1 through 7** are used. Switch number 8 controls the tamper switch. When switch number 8 is OFF, the tamper switch is in series with zone input A (terminal 5); therefore, on a Q-LEM cover tamper alarm, the panel will display a **DISCON** for zone A. The general formula for determining the zone numbers from the address (decimal) value is the following:

$$\text{Zone A} = (\text{Address Value} \times 2) - 1$$
$$\text{Zone B} = \text{Address Value} \times 2$$
$$\text{Zone C} = (\text{Address Value} \times 2) + 1$$
$$\text{Zone D} = (\text{Address Value} \times 2) + 2$$

The coding table on page 27 may be used to determine the switch settings.

MODEL 1101 COMMAND LEM (C-LEM)

☞ The Model 1101 Command Line Encoder Module (C-LEM) is a remote switching module that may be installed anywhere along the LEM line. The revised C-LEM MK II is fitted with an SPDT relay which is capable of switching a 2-amp, resistive load at 24 volts DC. The original C-LEM MK I (now discontinued) is described later on page 24. Similar to D-LEMs, C-LEMs have to be programmed to certain address values that determine their function and how they will operate. (See the OUTPUT ASSIGNMENT table for details, pages 28 and 26). Unlike D-LEMs, several C-LEMs may be programmed to the same address, in which case they will all respond identically. C-LEM addresses are not monitored by the panel and therefore the panel does not know if any C-LEMs are connected. C-LEMs are coded similarly to D-LEMs, with address values 1 to 54 being valid.

1101 C-LEM

To panel term 25
To panel term 26
To panel term 27 *
To panel term 28
To panel term 32

To next LEM term 1
To next LEM term 3
To next LEM term 4 *
To next LEM term A
To next LEM term B
Power to other C- LEMs or PIRs

* This connection is not necessary since the C-LEM does not use the DATA line. If no more LEMs are beyond this C-LEM, you may use a quad wire to feed the C-LEM .

From on-board tamper switch

From on-board relay
Contact rating 2-amp, 24-vdc, resistive load

The decoding electronics on the C-LEM printed circuit board are powered from the LEM line; however, the on-card relay coil requires an external source of power. It is **imperative** that this power be supplied from the APLEX control panel's auxiliary power terminals 28 (-ve) and 32 or 33 (+ve). Connection can be made by using a second quad for power. The use of an extra field-installed power supply, **powered from a different phase or branch circuit** than the main panel, has created **severe problems in the main panel**.

MODEL 1101 COMMAND LEM (C-LEM) cont.

Terminals 1, 3, 4, 9, 11, and 12 are connected exactly as for D-LEMs. Terminals B or F require +12 volts DC, while terminals A or E are negative. Note that the 12 volts DC **must** have a common negative with the panel. If you are using the APLEX panel's terminal 28 or 29 as a negative, then this requirement is met. If you use an auxiliary 12-volt DC power supply, try to power it from the same branch circuit as the panel. Connect a 2200-ohm (2K2) resistor link from the auxiliary supply negative to panel terminal 28 or use a 2200-ohm resistor to link terminal A to terminal 1 on a C-LEM. If more than one C-LEM is powered from the same auxiliary supply, then **only one** C-LEM should have the link between A and 1 to avoid ground loops. Terminals 5 and 6 are the dry contacts from the tamper micro switch on the C-LEM printed circuit board. You may wish to link this micro switch in series with the tamper circuit of a nearby LEM to supervise the C-LEM cover.

C-LEM MK I (discontinued)

Information on the C-LEM MK I is presented here for reference purposes only. The C-LEM MK I differs from the MK II version in that the MK I used a 0.5-amp DIL SPST relay connected to terminals 7 and 8. The MK I C-LEM is distinguished by the rainbow-coloured BCD switch used to set the address. Normally open (i.e., close on alarm) or normally closed (i.e., open on alarm) operation is controlled by the brown DIL switch 1. As the MK I was originally designed to operate from 7 volts DC, terminal 3 should be linked to terminal 2 with a 1N4001 general-purpose diode or an equivalent. Connect the anode to terminal 3 and the cathode (banded end) to terminal 2.

MODEL 1121 COMBINATION LEM (COMBO LEM)

The Model 1121 Combination Line Encoder Module (COMBO LEM) features one D-LEM and one C-LEM combined together on a standard LEM-size printed circuit board. The D-LEM is separately addressable from the C-LEM. This device is intended for use in installations that require local contact closure upon detection of an alarm condition (e.g., fire doors with a local siren).

1121 COMBO LEM
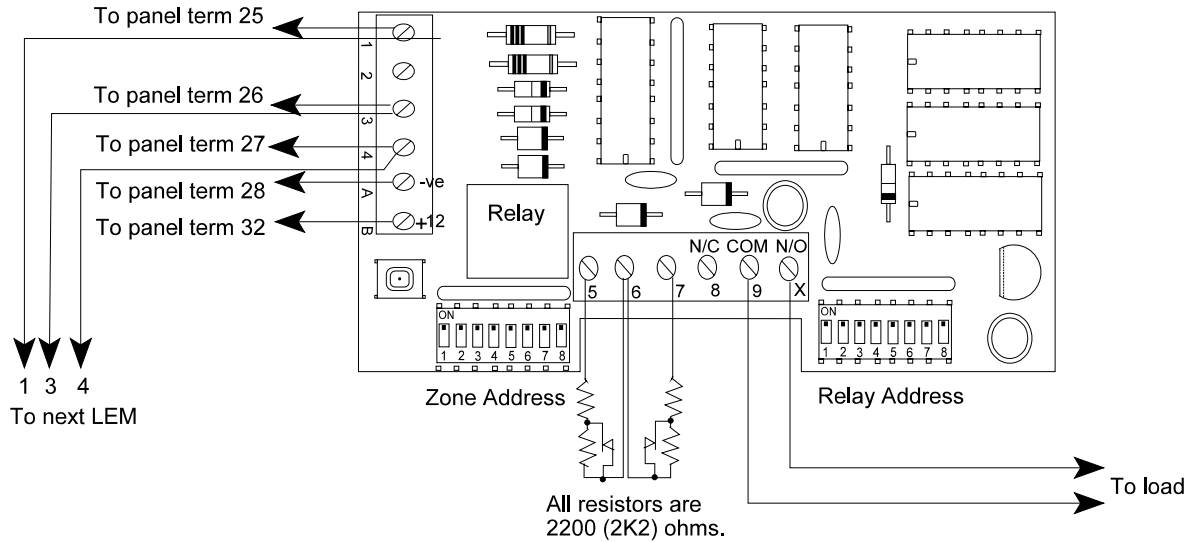
The DIL switches are used to address the D-LEM and C-LEM sections of the COMBO LEM in exactly the same way as an individual unit. See the coding table on page 26. The alarm input loops are wired like a standard D-LEM. See page 13.

MODEL 1020 D-LEM, 1101 C-LEM, AND 1121 COMBO LEM CODING TABLE

	ZONE NUMBER VS. TERM. STRIP SCREWS		D-LEM/C-LEM/ COMBO LEM	DIL SW. NO.
TERM. NO.	5 (Even)	7 (Odd)	ADDRESS	(Set to OFF)
ZONE NO.	2	1	1	8
	4	3	2	7
	6	5	3	7,8
	8	7	4	6
	10	9	5	6,8
	12	11	6	6,7
	14	13	7	6,7,8
	16	15	8	5 **LIMIT of 3016** LEM LINE
	18	17	9	5,8
	20	19	10	5,7
	22	21	11	5,7,8
	24	23	12	5,6
	26	25	13	5,6,8
	28	27	14	5,6,7
	30	29	15	5,6,7,8 **LIMIT of 3030** LEM LINE
	32	31	16	4
	34	33	17	4,8
	36	35	18	4,7
	38	37	19	4,7,8
	40	39	20	4,6
	42	41	21	4,6,8
	44	43	22	4,6,7
	46	45	23	4,6,7,8
	48	47	24	4,5
	50	49	25	4,5,8
	52	51	26	4,5,7
	54	53	27	4,5,7,8
	56	55	28	4,5,6
	58	57	29	4,5,6,8
	60	59	30	4,5,6,7
	62	61	31	4,5,6,7,8
	64	63	32	3
	66	65	33	3,8
	68	67	34	3,7
	70	69	35	3,7,8
	72	71	36	3,6
	74	73	37	3,6,8
	76	75	38	3,6,7
	78	77	39	3,6,7,8
	80	79	40	3,5
	82	81	41	3,5,8
	84	83	42	3,5,7
	86	85	43	3,5,7,8
	88	87	44	3,5,6
	90	89	45	3,5,6,8
	92	91	46	3,5,6,7
	94	93	47	3,5,6,7,8
	96	95	48	3,4
	98	97	49	3,4,8
	100	99	**50**	3,4,7 **LIMIT of 3100**

MODEL 1024 Q-LEM CODING TABLE

ZONE NUMBER VS.
TERM. STRIP SCREWS

QUAD LEM REV 1.0				QUAD LEM REV 2.1				Q-LEM ADDRESS VALUE	DIL SWITCH # SET TO OFF	
TERM. NO. 5	7	8	10	TERM NO. **ZA**	**ZB**	**ZC**	**ZD**			
Designation **A**	**B**	**C**	**D**							
ZONE NO. 4	3	6	5	ZONE NO. 3	4	5	6	2	7	
8	7	10	9	7	8	9	10	4	6	
12	11	14	13	11	12	13	14	6	6,7	
16	15	18	17	15	**16**	17	18	8	5	**LIMIT of 3016**
20	19	22	21	19	20	21	22	10	5,7	
24	23	26	25	23	24	25	26	12	5,6	
28	27	**30**	29	27	28	29	**30**	14	5,6,7	**LIMIT of 3030**
32	31	34	33	31	32	33	34	16	4	
36	35	38	37	35	36	37	38	18	4,7	
40	39	42	41	39	40	41	42	20	4,6	
44	43	46	45	43	44	45	46	22	4,6,7	
48	47	50	49	47	48	49	50	24	4,5	
52	51	54	53	51	52	53	54	26	4,5,7	
56	55	58	57	55	56	57	58	28	4,5,6	
60	59	62	61	59	60	61	62	30	4,5,6,7	
64	63	66	65	63	64	65	66	32	3	
68	67	70	69	67	68	69	70	34	3,7	
72	71	74	73	71	72	73	74	36	3,6	
76	75	78	77	74	76	77	78	38	3,6,7	
80	79	82	81	79	80	81	82	40	3,5	
84	83	86	85	83	84	85	86	42	3,5,7	
88	87	90	89	87	88	89	90	44	3,5,6	
92	91	94	93	91	92	93	94	46	3,5,6,7	
96	95	**98**	97	95	96	97	**98**	48	3,4	**LIMIT of 3100**
100	99	n/a	n/a	99	100	n/a	n/a	50	3,4,8	

Note: This chart has been extended to show all possible address settings and reference is made to the 16-zone (3016) and 30-zone (3030) APLEX control panels.

PANEL OUTPUTS

Included in the basic panel are seven outputs: three SPDT relays and four switched-positive, current-limited voltage outputs. The relay outputs have been arbitrarily designated as outputs 1, 2, and 7 and the voltage switches have been designated as outputs 3 through 6. If dry contacts are required from the voltage outputs, a EUROPLEX Model 1104 Quad Relay Module (QRM) may be installed either outside of the panel or within the panel. Operating in tandem with these panel outputs are C-LEMs 1 through 7 which can be used to provide remote-location duplicates of the outputs on the main control panel. Additionally, C-LEM outputs 8 through 19 have been factory assigned to provide dry-contact output for certain functions (refer to ZONE TYPES, page 30). Note that all output C-LEMs and INTRUSION panel output RELAY 1 (central/monitoring station alarm relay) are normally energized. These relays will fail in alarm in the event all power to the panel is removed. The other panel relays are normally de-energized. All panel outputs and C-LEMs except FIRE TROUBLE panel voltage OUTPUT 5 and TECH output C-LEMs 12 and 13 are reset upon entry or re-entry to the DISARM mode.

OUTPUT ASSIGNMENT

PANEL/C-LEM OUTPUT NO.	PANEL TERMINAL SCREW	FUNCTION
1	13-15	Cen./Mon. Station Output, SPDT relay
2	10-12	Fire Alarm, SPDT relay
3	3	Clear To Arm, +ve voltage
4	4	System Armed, +ve voltage
5	5	Fire Trouble, +ve voltage
6	6	System Fault, +ve voltage
7	7-9	Timed Bell Cut-off, SPDT relay
8	-	Remote Buzzer, C-LEM 8
☞ 9	-	Panic, C-LEM 9
10	-	Internal Bell, C-LEM 10
11	-	Monitor Zone, C-LEM 11
12	-	Group-follow Tech, C-LEM 12
☞ 13	-	Holdup/Duress, C-LEM 13
14	-	Fire Door, C-LEM 14
15	-	Line-cut Monitor, C-LEM 15
16	-	Gate Valve, C-LEM 16
17	-	Pressure Drop, C-LEM 17
18	-	24Hour, C-LEM 18
☞ 19	-	Smoke Detector Reset, C-LEM 19

PANEL OUTPUTS cont.

PANEL/C-LEM OUTPUT NO.	PANEL TERMINAL SCREW	FUNCTION
21	-	Area 1 Armed, C-LEM 21
22	-	Area 2 Armed, C-LEM 22
23	-	Area 3 Armed, C-LEM 23
24	-	Area 4 Armed, C-LEM 24
25	-	Area 5 Armed, C-LEM 25
26	-	Area 6 Armed, C-LEM 26
27	-	Area 7 Armed, C-LEM 27
28	-	Area 8 Armed, C-LEM 28
29	-	Common Area Armed, C-LEM 29
31	-	Area 1 Intrusion Alarm, C-LEM 31
32	-	Area 2 Intrusion Alarm, C-LEM 32
33	-	Area 3 Intrusion Alarm, C-LEM 33
34	-	Area 4 Intrusion Alarm, C-LEM 34
35	-	Area 5 Intrusion Alarm, C-LEM 35
36	-	Area 6 Intrusion Alarm, C-LEM 36
37	-	Area 7 Intrusion Alarm, C-LEM 37
38	-	Area 8 Intrusion Alarm, C-LEM 38
39	-	Common Area Intrusion Alarm, C-LEM 39
41	-	Area 1 Remote Exit Buzzer, C-LEM 41
42	-	Area 2 Remote Exit Buzzer, C-LEM 42
43	-	Area 3 Remote Exit Buzzer, C-LEM 43
44	-	Area 4 Remote Exit Buzzer, C-LEM 44
49	-	Common Area Rem Exit Buzzer, C-LEM 49

ZONE TYPES

As received from the factory, all 100 zones in the panel are programmed as instant-acting, AREA-1 intrusion zones. Unless indicated, the zone loops are wired normally closed, opening on alarm. Each of the 100 zones in the panel may be programmed with a new zone type. These have been given descriptive names and their characteristics are described in the following section:

AREA-1: This is a normally closed, instant-acting, intrusion zone type for area 1 of the system. When area 1 is armed, a violation of this zone will operate central/monitoring station INTRUSION panel relay output 1, output C-LEM 1, TIMED BELL panel relay output 7, output C-LEM 7, area INTRUSION output C-LEM 31 and the event will be logged.

AREA-2: This is a normally closed, instant-acting, intrusion zone type for area 2 of the system. When area 2 is armed, a violation of this zone will operate central/monitoring station INTRUSION panel relay output relay 1, output C-LEM 1, TIMED BELL panel relay output 7, output C-LEM 7, area INTRUSION output C-LEM 32 and the event will be logged.

AREA-3: This is a normally closed, instant-acting, intrusion zone type for area 3 of the system. When area 3 is armed, a violation of this zone will operate central/monitoring station INTRUSION panel relay output 1, output C-LEM 1, TIMED BELL panel relay output 7, output C-LEM 7, area INTRUSION output C-LEM 33 and the event will be logged.

AREA-4: This is a normally closed, instant-acting, intrusion zone type for area 4 of the system. When area 4 is armed, a violation of this zone will operate central/monitoring station INTRUSION panel relay output 1, output C-LEM 1, TIMED BELL panel relay output 7, output C-LEM 7, area INTRUSION output C-LEM 34 and the event will be logged.

AREA-5: This is a normally closed, instant-acting, intrusion zone type for area 5 of the system. When area 5 is armed, a violation of this zone will operate central/monitoring station INTRUSION panel relay output 1, output C-LEM 1, TIMED BELL panel relay output 7, output C-LEM 7, area INTRUSION output C-LEM 35 and the event will be logged.

AREA-6: This is a normally closed, instant-acting, intrusion zone type for area 6 of the system. When area 6 is armed, a violation of this zone will operate central/monitoring station INTRUSION panel relay output 1, output C-LEM 1, TIMED BELL panel relay output 7, output C-LEM 7, area INTRUSION output C-LEM 36 and the event will be logged.

AREA-7: This is a normally closed, instant-acting, intrusion zone type for area 7 of the system. When area 7 is armed, a violation of this zone will operate central/monitoring station INTRUSION panel relay output 1, output C-LEM 1, TIMED BELL panel relay output 7, output C-LEM 7, area INTRUSION output C-LEM 37 and the event will be logged.

ZONE TYPES cont.

AREA-8: This is a normally closed, instant-acting, intrusion zone type for area 8 of the system. When area 8 is armed, a violation of this zone will operate central/monitoring station INTRUSION panel relay output 1, output C-LEM 1, TIMED BELL panel relay output 7, output C-LEM 7, area INTRUSION output C-LEM 38 and the event will be logged.

COMMON: This is a normally closed, instant-acting, intrusion zone type for the common area of the system. The common area could be, for example, a lobby or a cafeteria. When **any one** area of the system is disarmed, then the common area is also disarmed. When **all active** areas are armed, then the common area is also armed. When the panel is fully armed, a violation of this zone will operate central/monitoring station INTRUSION panel relay output 1, output C-LEM 1, TIMED BELL panel relay output 7, output C-LEM 7, area INTRUSION output C-LEM 39 and the event will be logged.

EXIT-1: This normally closed zone type is used to monitor the entry/exit door for area 1 of the system. As area 1 is armed, the piezo-sounder will beep to indicate that it is safe to leave the area. When you enter area 1 through the EXIT-1 zone, the piezo-sounder will beep again to remind you to disarm that area. The amount of entry time is the same as the amount of exit time set by the Exit-1 Time variable (see page 48).

EXIT-2: This normally closed zone type is used to monitor the entry/exit door for area 2 of the system. As area 2 is armed, the piezo-sounder will beep to indicate that it is safe to leave the area. When you enter area 2 through the EXIT-2 zone, the piezo-sounder will beep again to remind you to disarm that area. The amount of entry time is the same as the amount of exit time set by the Exit-2 Time variable (see page 48).

EXIT-3: This normally closed zone type is used to monitor the entry/exit door for area 3 of the system. As area 3 is armed, the piezo-sounder will beep to indicate that it is safe to leave the area. When you enter area 3 through the EXIT-1 zone, the piezo-sounder will beep again to remind you to disarm that area. The amount of entry time is the same as the amount of exit time set by the Exit-3 Time variable (see page 48).

EXIT-4: This normally closed zone type is used to monitor the entry/exit door for area 4 of the system. As area 4 is armed, the piezo-sounder will beep to indicate that it is safe to leave the area. When you enter area 4 through the EXIT-2 zone, the piezo-sounder will beep again to remind you to disarm that area. The amount of entry time is the same as the amount of exit time set by the Exit-4 Time variable (see page 49).

C-EXIT: This normally closed zone type is used to monitor the exit/entry door for the common area (e.g., a lobby). When the last area of the system is armed, the display will show **FULL ARM** for a few seconds and the piezo-sounder will beep to indicate that it is safe to leave the common area. The amount of exit time allowed is determined by the arming method used. If each individual area has to be armed, then the exit time for the common area will be that of the last

ZONE TYPES cont.

31

area armed. If all areas are to be armed at the same time using the FULL ARM key, then the exit time will be that programmed for the Full Arm Ex Time variable (see page 48). When entry is made into the common area through a C-EXIT zone, the piezo-sounder will beep to remind that user to disarm his or her individual area. Disarming an individual area will stop the common exit timer. The amount of entry time allowed is that programmed in the C-Exit variable (see page 48).

FIREDR: This normally closed zone type is used with fire exit doors that should never be opened when the premises is occupied. *Violation of this zone is displayed locally and transmitted to the central/ monitoring station.* While any one or more areas of the system are disarmed, an open on this zone will operate FIREDR group output C-LEM 14, cause the piezo-sounder to beep, the event to be logged, and the display to show the flashing alert message ***FIRE DOOR OPENED***, alternating with a flashing zone description. When all areas of the system are armed, this zone responds as an instant-acting COMMON zone (see above).

PANIC: This normally closed zone type should be used with *latching* panic buttons to ensure that activation will be detected. An open at any time will operate CONTINUOUS BELL panel relay output 7 and output C-LEM 7 and PANIC output C-LEM 9 and cause the piezo-sounder to beep, the event to be logged, and the display to show the flashing alert message ****PANIC ALARM****, alternating with a flashing zone description. PANIC is an audible HOLDUP zone!

☞   **HOLDUP:** This normally closed zone type should be used with *latching* holdup buttons to ensure that activation will be detected. An open at any time will operate HOLDUP output C-LEM 13 and cause the event to be logged but piezo-sounder will not beep. Note: Since the panel will display a zone description any time a zone is violated, you should program a zone description that avoids the use of the word HOLDUP; choose some innocuous phrase such as TEST ZONE X. HOLDUP is a silent PANIC zone!

☞   **TELFLT:** This normally closed zone type is used to monitor the relay output of a dialler telephone line-cut module. An open on this zone will operate TELFLT output C-LEM 15 and cause the event to be logged. If any one or more areas of the system are disarmed, the piezo-sounder will beep and the display will show the flashing alert message ***TELCO FAULT***, alternating with a flashing zone description. When the TELFLT zone is restored, output C-LEM 15 will be reset and the event will be logged.

24HOUR: This normally closed zone type is used with foil, fine wire, emergency doors, etc. When any one or more areas of the system are disarmed, an open on this zone will operate INTRUSION ALARM panel relay output 1 and output C-LEM 1 and 24HOUR output C-LEM 18, which may be used for local annunciation (buzzer, lamp, etc.), and cause the event to be logged. If the Alert & Display variable (see page 49) has been set to one (1) for an attended site, then the piezo-sounder will beep and the display will show the flashing alert message **** INTRUDER ALARM ****, alternating with a flashing zone description. When all areas of the system are armed (i.e., the panel is fully armed), this zone responds as an instant-acting COMMON zone (see page 31).

☞ **TECH:** This zone type is used to provide supervisory monitoring of non-burglary conditions (e.g., freezer monitor, boiler flame-out, building temperature, etc.). You may use normally closed switches (2 EOL) or normally open switches (1 EOL) or a mixture of both. If the Audible Tech variable (page 49) is set to one (1) *and* the Alert & Display variable (see page 49) is set to one (1) for an attended site, then the piezo-sounder will beep and the display will show a flashing zone description. A TECH zone alarm can have two distinct outputs: you may use an *individual* output C- LEM to give a one-for-one dry contact that follows the state of the zone input (e.g., alarm equals contact closure, restore equals contact open) or you may choose to have a *group-following*

☞ output C-LEM 12 that will respond to any zone labelled TECH. The *group-following* output C-LEM will reset only when *all* TECH zones are normal. **To avoid conflict with the pre-programmed outputs 1 through 19 and the area 1 through 8 C-LEMs (see page 28), TECH zones should be between 45 and 54.** If not all areas are used (say areas 5 through 8), then TECH zones 25 through 28 would be permitted. **If you require more Tech zones, contact the factory for programming assistance.** For example, TECH zone 7 would operate TIMED BELL output relay 7 and individual output C-LEM 7. To avoid this conflict, notice that TECH zone 45 will only operate output C-LEM 45. When TECH zone 45 restores, output C-LEM 45 will also reset. The group-following output C-LEM is rigidly assigned. For example, if TECH zone 45 alarms, the group-following TECH output C-LEM 12 will operate; however, if TECH zone 46 alarms at a later time, there will be no further action from output C-LEM 12 since it is already operated. When *all* TECH zones restore, output C-LEM 12 will reset.

FIRENO: This normally open zone type is used with smoke detectors, manual-pull stations, fire alarm thermostats, fire alarm control panel *alarm relays,* etc. The normally open contact is wired as a two-wire, single end-of-line resistor loop. *Contact closure* will operate FIRE ALARM panel relay output 2 and output C-LEM 2 and cause the piezo-sounder to beep, the event to be logged and the display to show the flashing alert message **** FIRE ALARM **** , alternating with a flashing zone description. The loop wiring of a FIRENO zone is also supervised for trouble conditions. A break in the loop wiring (disconnect) will operate FIRE TROUBLE panel voltage output 5 and output C-LEM 5 and cause the event to be logged and the display to show the flashing alert message **** FIRE TROUBLE ****, alternating with a flashing zone description. If the Alert & Display variable is set to one (1), then the piezo-sounder will beep. When **all** FIRENO loops are normal (not disconnected or shorted), FIRE TROUBLE panel voltage output 5 and output C-LEM 5 will restore. **NOTE: For monitoring the *trouble relay on a fire alarm panel,*** use another FIRENO zone. Connect one wire from the LEM zone input to the C terminal of the normally closed trouble relay. Connect one end of a 2200-ohm resistor to the N/C terminal. Connect the other end of the 2200-ohm resistor to the remaining input of the LEM zone input. An alarm on the trouble relay will cause a DISCON condition of the zone input and this in turn will create the required FIRE TROUBLE condition of the panel. **Do not connect the trouble relay in series with the alarm relay above as the supervision of the *alarm relay wiring* should only indicate trouble on the *alarm relay circuit.***

FOLWR1: This normally closed zone type is used to provide protection along the exit and entry path(s) between the control panel or the remote keypad and the exit and entry door(s). When area 1 is armed, this type of zone is instant acting except for the following two cases: During exit, no alarm will occur on any FOLWR1 zone within the exit time allowed and, similarly, during entry, no alarm will occur within the entry time allowed (see Exit-1 Time variable, page 48). After the delay time expires, the FOLWR1 zone responds as an instant-acting AREA-1 zone. Straying from the follower path into other protected zones during the exit/entry time will also cause instant-acting alarms.

FOLWR2: This normally closed zone type is used to provide protection along the exit and entry path(s) between the control panel or the remote keypad and the exit and entry door(s). When area 2 is armed, this type of zone is instant acting except for the following two cases: During exit, no alarm will occur on any FOLWR2 zone within the exit time allowed, and similarly, during entry, no alarm will occur within the entry time allowed (see Exit-2 Time variable, page 48). After the delay time expires, the FOLWR2 zone responds as an instant-acting AREA-2 zone. Straying from the follower path into other protected zones during the exit/entry time will also cause instant-acting alarms.

GATE: This normally closed zone type is used to monitor the gate valve or the post indicator valve (PIV) in a sprinkler system. When a gate valve closes (i.e., the switch contacts open), GATE VALVE output C-LEM 16 will operate and the event will be logged. If the Alert & Display variable (see page 49) is set to one (1) for an attended site, then the piezo-sounder will beep and the display will show the flashing alert message ***SPRINKLER SUPERVY*** , alternating with the warning message **++CALL SERVICE++** and a flashing zone description.
☞ During service to the sprinkler riser, the gate valve switch may have to be operated a number of times in succession. To avoid unnecessary traffic to the central/monitoring station, a Supvry Shutdown variable (see page 50) may be programmed to limit the number of signals.

PRESR: This normally closed zone type is used to monitor the pressure switch on a sprinkler riser. When a pressure drop occurs, PRESSURE output C-LEM 17 will operate and the event will be logged. If the Alert & Display variable (see page 49) is set to one (1) for an attended site, then the piezo-sounder will beep and the display will show the flashing alert message ***SPRINKLER SUPERVY*** , alternating with the non-flashing warning message **++CALL SERVICE++** and a flashing zone description. In the course of servicing the sprinkler riser, the pressure switch may have to be operated a number of times in succession. To avoid unnecessary traffic to the monitoring station a Supvry Shutdown variable (see page 50) may be programmed to limit the number of signals.

FLOW: This normally open zone type is used to monitor the normally open flow switch on a sprinkler riser. Contact closure causes the retard timer (see Retard Time variable, page 49) to count down. If the switch contact is still closed at the expiry of the retard time, the panel will execute the FIRENO routine (see page 33). If the switch opens before the timer finishes counting down, the retard timer will reset and no further action will occur.

POWERING UP THE PANEL

INITIAL ACTIVATION OF THE PANEL

The control panel as received from the factory has been given a COLD START and all settings will be at their default value. The next time that power is applied to the panel, it will execute a WARM START (see page 36). On powering up, you will be concerned with entering the customer's name and address and initializing the LEM LINE. Once powering up is finished, you will be ready to program the panel.

When power is first applied to the control panel, the display will show the following: **RAM PROTECTED!**. Next, the display will show the operating system version number and date: **A4OS07 26OCT94**; followed by the copyright message: **(C) EUROPLEX 1985-94** and finally the application program version and date: **A100 8A250U 29MAY00**. This last message will be displayed for about three seconds during which time an option to COLD START the panel will be available.

COLD START WITH ZAP

It may sometimes be necessary to clear the panel's RAM memory in the field. For example, if the panel has been removed from a previous location and is to be installed in a new location or if severe transients (lightning, etc.) have caused corruption of the memory, it will be necessary to start anew. **A COLD START will clear the whole of the memory, destroying all existing log, zone, and user files.**

To select a COLD START, press the FULL ARM key within the three seconds allowed above. (If the FULL ARM key is not pressed within these three seconds, the panel will execute a WARM START, see page 36. To return to a COLD START option, press the CPU reset button.) If a COLD START is chosen, then the piezo-sounder will beep and the display will show **ZAP?**.

Press the YES key to accept the selection. (If you decide to leave the RAM memory unchanged at this stage, press any other key than the YES key. You will then abort the COLD START and instead execute an AUTO START, see page 38). If the YES key is pressed, the display will show **RAM=0000** for about five seconds, indicating that all RAM memory is being zeroed, followed by **ENTER NAME/ADDRESS ?**. Press the YES key and the display will show a flashing cursor, /\, in the farthest-left position.

It is important that you enter the name and address of the site as this will be printed in the heading of the system log, literal print-out, and on-line report and will provide a useful record for all print-outs. Refer to page 4 for information on how to enter the necessary characters. Once the name and address information is entered, position the cursor up and press the RETURN key.

<center>**POWERING UP THE PANEL** cont.</center>

The display will now show **COLD START** and, in another two seconds, **PROM CHKSUM= nnnnH**. The piezo-sounder will beep. Press the RETURN key to continue and the display will show **ON-LINE O-->N**. Proceed to LEM-LINE INITIALIZATION (see below).

Note: If you do not select yes to the ZAP? function during a COLD START, you will not be given the chance to enter a name and address. If you wish to return to a name and address query, you must select SET DATA FORMAT on pages 55 and 56 or LITERAL EDIT on page 53.

WARM START

When power is applied to the control panel, the display will show the usual start-up messages for a moment. If a COLD START is not initiated, then a WARM START will be effected. On a WARM START, the panel will by-pass name and address entry. To change an entry or correct it in this case, you must select the SET DATA FORMAT function (see pages 54 and 58) or the LITERAL EDIT function and edit literal 498 (see page 50).

It is important that you enter the name and address of the site as this will be printed in the heading of the system log, literal print-out, and on-line report and will provide a useful record for all print-outs. Refer to page 4 for information on how to enter the necessary characters. Once the name and address information is entered, position the cursor up and press the RETURN key.

The panel will show **AUTO START** and then **5 DIGIT CODES ?**. Proceed to 5 DIGIT CODES on page 37.

LEM-LINE INITIALIZATION

An initialization of the LEM line brings any newly connected zones on line; otherwise, they will be ignored by the panel. When the display shows **ON-LINE O-->N, O** represents the original (old) number of zones on line prior to powering up and **N** represents the current (new) number of zones on line. The piezo-sounder will sound a single beep if there is no change in the total number of inputs (i.e., Old = New) or a multibeep if there has been a change. In either case, press the YES key to accept the initialization or the NO key to repeat the initialization check. If the NO key is pressed, account for the missing inputs and then press the YES key.

Note: Any LEM input loops in the disconnect state or short circuited will **not** be included in the count or be recognized by the panel when the program continues. Remember that the D-LEM cover tamper switch is in series with terminal 5 (the even-numbered input) of any D-LEM.

Loop states are categorized as:

DISCON   - Loop open circuited. Loop resistance = infinity
OPEN   - Alarm contact open.   Loop resistance = 4K4 ohms
CLOSED   - Alarm contact closed. Loop resistance = 2K2 ohms
SHORT   - Loop short circuited. Loop resistance = 0 ohms

The initialization routine checks the resistance of the loops. If the values returned are outside the allowed ranges, the zone number of the offending input will be displayed. For example: **AREA-1 3 = 22** indicates the analogue value of **22** from zone **3** is out of range. This is a problem that **must** be corrected. Usually a wiring fault or the wrong value of end-of-line resistor is responsible. If the panel sees a response from zone numbers 101 to 108, **ILLEGAL LEM NUMBER** is displayed as these zone addresses are used by Model 3210, 3220, 3230, and 3240 remote keypads. All zones that have allowable values at or near the threshold of acceptability will be counted and the total will be displayed at the end of this routine. Excessive capacitance and/or resistance of the cable can also be a problem if more than 2 km of cable are connected or cable with high capacitance (i.e., shielded cable) is used. Individual responses from the LEM inputs can be checked in the SINGLE-ZONE MONITOR option of the SERVICE MODE mode (see page 44). When the correct number of zones is displayed, press the YES key to proceed to the main program..

☞   At this time, the display will show **5 DIGIT CODES   ?**. Press the YES key to accept the five-digit code option or press the NO key to choose the four-digit code option. See the SET IDS/OPTIONS function on page 46 for further information. If neither key is pressed within three seconds, the panel will default to the four-digit code option.

The panel will now show **BUSY...RE-SCHEDULING** for a few seconds. Next, **DATE and TIME** will appear, alternating with some flashing alert messages. If any of the zones are open (in alarm), then **ZONE TYPE   ZONE NUMBER   OPEN** will also be displayed. For information on how to acknowledge the alert messages, refer to page 66. This confirms the operation of the hardware and you may now proceed with programming the control (see page 39).

SOFT START - LEM-LINE RE-INITIALIZATION

If a re-initialization of the LEM line is required, select the RESTART SYSTEM function (see page 53). To select this function, enter the Service user code and then press the R key (shift 7). A reboot, or SOFT START, of the panel will be effected. The display will show the usual start-up messages for a few seconds. From this moment on, the procedure is the same as for a WARM START (see page 36 above).

AUTO START

The panel contains a "watch-dog" timer. Should there be a major disturbance to the hardware (e.g., electrical storm, static, etc.), this timer will reset and force the panel to effect an AUTO START. A flashing alert message will appear that must be acknowledged (see page 40).

P.CODE START

As the panel is executing its instructions from the main program EPROM, it will check the EPROM checksum against a stored value. If it detects a difference, it will restart the program and indicate this by displaying **P. CODE START**. An alert message will appear that must be acknowledged (see page 40). This situation is very rare.

PROGRAM SELF-TESTS

During the start-up routine, the panel will perform several comprehensive self-tests and display a fault warning message if any test fails. The display will show **RAM FILE ERROR** and the piezo-sounder will beep. Press the RETURN key to acknowledge the condition and then continue on. For the sake of clarity and because such failures are rare, these tests have not been included in the previous discussion.

The self-checks performed are for RAM function and a RAM data checksum. The flashing warnings displayed are:

RAM FAIL AT nnnn - indicates a memory-component fault. The printed circuit board has to be replaced.

LOG DATA LOSS! - indicates that some or all of the log data is corrupted. If the log is printed or displayed, then certain entries may yield garbage displays. The dates and/or times of logged events may also be corrupted. The log error message is cleared when acknowledged and no further action is required.

LIT DATA LOSS! - indicates corruption of some or all of the system literals. The panel will check all 750 literals in the program and any that are corrupted will be defaulted back to their factory settings. The defaulted literals are displayed and printed. If the panel can complete this routine, print a copy of the system literals (see page 53) and compare it with an old record. Depending on the severity of the corruption, a recovery may not be possible and a COLD START with ZAP will have to be performed (see page 35).

IDS/OPTIONS ERROR - indicates corruption of the user identification codes or options. The panel may default all identification codes and options to their factory settings. All user identification codes and options may need to be reprogrammed.

PROGRAMMING THE PANEL

FUNCTIONS AND MODES

There are 25 functions or modes available in the control panel. Access to these by each of the 248 general users is assigned by the Master user (see page 46). Activities pertaining to the Service user have to do with installation and service and are only accessed by him or her. **Note that the Service user code can now be entered when the control is in FULL ARM mode**.

When the control panel is initially powered up, the Service user will automatically be assigned code 1010 and the Master user will be assigned code 1020. These are the default codes to allow access into the panel. Both codes can be changed later. The following table shows the selection of program functions and modes. To gain access, enter the appropriate user code, followed by the required function, number, or letter key.

FUNCTION OR MODE	USER NUMBER		KEYBOARD DESIGNATION	PAGE NO.
OPTIONS AVAILABLE/HELP	1	2	HELP	40
ACKNOWLEDGE ALARMS	1	2	0	40
DISARM	1	2	FULL DISARM	40
AUDIBLE SILENCE 1		2	AUDIBLE SILENCE 1	41
AUDIBLE SILENCE 2		2	AUDIBLE SILENCE 2	41
FULL ARM	1	2	FULL ARM	41
9 KEY (used for custom applications)	1	2	9	41
SYSTEM LOG	1	2	YES	41
SINGLE-ZONE SHUNT	1	2	NO	42
SERVICE MODE	1		A (Shift YES)	43
SET IDS/OPTIONS	1	2	C (Shift FULL DISARM)	46
ASSIGN ZONES/VARIABLES	1		D (Shift AUD SILENCE 1)	47
LITERAL EDIT	1		E (Shift AUD SILENCE 2)	51
DISABLE MODE	1		F (Shift FULL ARM)	51
DAYLIGHT SAVING TIME CHNGE	1	2	H (Shift HELP)	51
(IMMEDIATE) COMMAND MODE	1		I (Shift 1)	52
NUMBER OF AREAS ASSIGNMENT	1		L (Shift 2)	52
AREA/USER ASSIGNMENT	1	2	M (Shift 3)	52
RELAY/C-LEM TEST	1		O (Shift 5)	52
PRINT REPORTS	1		P (Shift 6)	53
RESTART SYSTEM/SOFT START	1		R (Shift 7)	53
SET DATA FORMAT	1		S (Shift 8)	53
SET DATE/TIME	1	2	T (Shift 9)	58
SET TIME COMMANDS	1	2	U (Shift BACKSPACE)	59
TIME ADVANCE	1	2	! (Shift Shift YES)	59

PROGRAMMING THE PANEL cont.

39

Some functions or modes are self-completing (i.e., they exit automatically). Others will require further action. For the SET DATE/TIME and SET TIME COMMANDS functions, enter a military (24-hour) time and press the RETURN key to exit. Other functions will display a flashing sub-menu. To select from these sub-menus, follow the guidelines on the keyboard leading to the FULL DISARM, AUDIBLE SILENCE 2 (previously PART ARM 2), or HELP keys and press the one that is appropriate. For example, in SERVICE MODE mode, a sub-menu of three choices will appear. These will be **REPORT--TEST-MONITOR**. If you wish to choose **REPORT**, then press the FULL DISARM key; if **TEST**, then press the AUDIBLE SILENCE 2 (previously PART ARM 2) key; and if **MONITOR**, then press the HELP key. Having made your choice, follow the instructions that appear on the next display. To exit, press the NO key when there are no further entries to be made. Then, when the display shows **QUIT ?**, press the YES key to exit, or any other key to force a redisplay of the sub-menu.

IMPORTANT!! **Do not** leave the panel with a sub-menu showing. Anyone could make a selection and gain access to the premises later. Always complete your selection and exit to date and time.

EXPLANATION OF FUNCTIONS AND MODES

☞ Note that a four-digit code entry in the four-digit code option or a five-digit code entry in a five-digit option will be presumed in the following explanation of functions and modes. Should a four-digit code be entered when the five-digit code option has been chosen, then you must press the RETURN key to complete the entry.

OPTIONS AVAILABLE (HELP KEY): This function is included to help the user who is not sure of the system options available. Enter your user code and then press the HELP key. The panel will display **SELECT AN OPTION...**, followed by the first option available. The option will have a **?** beside it. If you wish to select this option, then press the YES key. If you do not wish to select this option, then press the NO key to continue on to the next available option. This procedure must be repeated until an option is chosen. To exit from this function without choosing an option, repeatedly press the HELP key until you see **CLEAR DISPLAY**. Press the YES key.

ACKNOWLEDGE ALARMS (0 key): This function is used to acknowledge receipt of an alarm condition (e.g., ****FIRE ALARM****). Enter your user code and then press the 0 (zero) key. This action will stop the flashing display, silence the piezo-sounder, and turn off the bells. A tamper or disconnect condition on any zone will also create an alarm that is logged in the system log. When this happens, both the zone description and zone state are displayed. This may be acknowledged to stop the piezo-sounder.

DISARM (FULL DISARM key): This is the normal daytime or open-period operating mode. To disarm the panel, enter your user code and then press the FULL DISARM key. When the panel is

in DISARM mode, the date and time will alternate with a display of any zones that are open (in alarm). If a zone description has been programmed, then the panel will display the actual zone description (e.g., **1. SIDE DOOR**) instead of the zone type, number, and state (e.g., **AREA-1 OPEN**). All shunted zones are cleared and all panel relays, most C-LEMs, and panel voltage switches are reset when this mode is selected or reselected. (The exceptions are FIRE TROUBLE panel voltage output 5 and output C-LEM 5, TECH output C-LEM 12, HOLDUP and DURESS output C-LEM 13, GATE VALVE output C-LEM 16, PRESSURE DROP output C-LEM 17, and SMOKE DETECTOR reset C-LEM 19, all of which reset when the appropriate zone resets.)

AUDIBLE SILENCE 1 (AUDIBLE SILENCE 1 key): On the single-area panels, this key used to be known as PART ARM 1. Since this function does not apply in a multi-area panel, the key is now used to silence the bells, sirens, piezo-sounders, etc. To select this function, enter your user code and then press the AUDIBLE SILENCE 1 key. This will reset FIRE ALARM panel relay output 2 and output C-LEM 2, TIMED BELL panel relay output 7 and output C-LEM 7, INTERNAL BELL output C-LEM 10, 24HOUR output C-LEM 18 and silence the piezo-sounder. It will not reset INTRUSION panel relay output 1 and output C-LEM 1 or the individual AREA ALARM output C-LEMs. This function only stops the noise. Someone in authority must either disarm the panel or disarm the area in question to reset these outputs.

AUDIBLE SILENCE 2 (AUDIBLE SILENCE 2 key): On the single-area panels, this key used to be known as PART ARM 2. As in AUDIBLE SILENCE 1 above, the key is now used to silence the bells, sirens, piezo-sounders, etc. The two keys can be used interchangeably.

FULL ARM (FULL ARM key): This is the nighttime or closed-period operating mode. In this mode, the display may be blank depending on the setting of the Full Arm Display variable (see page 49). Enter your user code and then press the FULL ARM key. If any zones are open, the display will show **CANNOT ARM**. If all zones are closed, the piezo-sounder will beep to indicate that exit time is in progress; when an EXIT zone or a FOLLWR zone is opened, the beeping rate will change until that zone is closed. During this exit and the subsequent entry time, an open (alarm) on any other zone will cause an instant, full alarm and the open zone will be logged in the system log.

9 KEY (9 key) : This is a spare key that can be programmed for custom functions (e.g., shunt a special block of zones, turn on a C-LEM, etc.). Contact the factory for a programming form and cost estimate for code development.

SYSTEM LOG (YES key): This function is used to print or display the historical log. Enter your user code and then press the YES key. In a polled [DVACS$^{(tm)}$] installation without a Model 3302R3 port splitter, the display will briefly show **SYSTEM LOG** and then the log will be scrolled on the 20-character display. In a non-polled installation (local printer) or a polled installation with a Model 3302R3 port splitter, the display will show **PRINT LOG   ?**. Press the

YES key to make a hard-copy record of the system log. While the printing is in progress, the display will show **PRINTING SYSTEM LOG**. If a printed copy is not required, press any other key. The display will briefly show **SYSTEM LOG** and the log will then be scrolled on the display. To abort the system log at any time, press the NO key. The format of the displayed output is as follows: Starting with the last event and working back in time, the panel will show three messages for each alarm entry:

> Message 1 is **DATE**TIME**
> Message 2 is **ZONE NUMBER or USER NUMBER**
> Message 3 is **ZONE DESCRIPTION or ACTION TAKEN BY USER**

The date and time are separated by ****** to distinguish an historical log display from the normal DISARM mode display. The content of the second and third messages will depend on whether it was a user action (e.g., SET DATE/TIME), in which case the user number will be the second message and action taken will be the third message, or a zone changing state, in which case the zone number will be the second message and the zone description will be the third message. The alarm log is capable of storing 600 of these three-part entries. While the log is being displayed, you may press the RETURN key to advance each line entry on the display. You may also press the FULL DISARM (+) key to move just the time entry back in time more quickly (i.e., to the older log entries) and then you may press the AUDIBLE SILENCE 1 (-) key to advance just the time entry forward in time more quickly (i.e., to rewind the log to the most recent entry). When you stop pressing these keys, the log will again continue its slow scroll back in time. This will allow you to easily review any display. When all entries have been displayed, the word **FINISHED** will appear and the panel will return to date and time. Press the NO key at any time to abort the system log.

SINGLE-ZONE SHUNT (NO key): This function provides a simple method of shunting when only a single zone is to be shunted or the total number of zones to be shunted is quite small. Enter your user code and then press the NO key. The display will show **SHUNT ZONE 0**. Enter the number of the zone that is to be shunted and press the RETURN key. The display will then show the description of the zone (e.g., ✳**3. MANAGER'S OFFICE**), if one exists, or, if no description exists, the display will show the zone type and zone number (e.g., ✳**AREA-1 3**). Having a zone description allows the user to see exactly which zone has been shunted. The flashing ✳ to the left of the description indicates that the zone is currently shunted. If an incorrect zone number has been entered, that zone can be un-shunted by pressing the YES key. (Pressing the YES key, in fact, toggles the shunt on and off. As the YES key is pressed, the flashing ✳ will come and go indicating whether a zone is shunted or not.) The FULL DISARM (+) key can be used to select higher zone numbers and the AUDIBLE SILENCE 1 (-) key can be used to select lower zone numbers. By using the FULL DISARM (+), AUDIBLE SILENCE 1 (-), and YES keys, you can quickly step through a range of zones and examine or change their status. If the zone displayed is the one to be shunted, then press the RETURN key and the panel will exit from

this mode. As the exit occurs, the panel beeps and then briefly displays the number of shunts in place. To exit at any time, press the RETURN key or the NO key.

SERVICE MODE (A key): To select this mode, enter the Service user code and then press the A key (shift YES). The display will show a flashing sub-menu: **REPORT--TEST-MONITOR**.

ON-LINE REPORT - The on-line report displays all zones that are connected to the panel and whose state was not disconnected or shorted at the last LEM-line initialization. The report starts with the lowest-numbered zone and increases numerically until all the on-line zones have been reported. To select the on-line report, press the FULL DISARM key. In a polled [DVACS$^{(tm)}$] installation without a Model 3302R3 port splitter, the panel cannot print a report and will immediately start displaying the report. In a non-polled installation (local printer) or a polled installation with a Model 3302R3 port splitter, the display will show **PRINT ON-L REPORT ?**.

Press the YES key to make a hard-copy record of the on-line report. While the printing is in progress, the display will show **PRINTING ON-L REPORT**. If a printed copy is not required, press any other key. The on-line report will now be scrolled on the display. As in the SYSTEM LOG function above, you may use the RETURN key and the AUDIBLE SILENCE 1 key to advance or rewind the display. The NO key will abort the report. When the display shows **QUIT ?**, you may chose to return to the sub-menu by pressing the NO key or exit this function by pressing the YES key.

WALKTEST - This option, selected by pressing the AUDIBLE SILENCE 2 key, is designed to ensure that all zones and their associated detectors are working correctly [i.e., reporting open (alarm) and closed (restored) conditions]. If possible, connect a printer to the panel when performing a walktest for a concise, date-stamped report showing the name and address of the installation, the number of zones tested, and a list of any untested zones.

In this option, the panel will display **WALKTEST** for a moment, followed by **TEST 1** (if zone 1 is on line!). To identify zone 1, press the HELP key and the display will briefly show the zone description. When zone 1 is activated, the panel will report this by displaying **TEST 2 : 1 CLOSED**. It has now set up for zone 2 and is waiting until that zone is activated before proceeding. (In the phrase **TEST 2 : 1 CLOSED**, **2** represents the zone on the system that is **to be** tested and **1** represents the **last** zone operated.)

If zones other than the one requested by the display are activated, their number and state (open or closed) will be shown; however, the panel will not ask for them when their position in the sequence occurs. If a zone cannot be tested, it may be disregarded by pressing any key. The NO key is used to exit.

TIMED BELL panel relay output 7 can be turned on very briefly (less than one second) on every zone change by pressing the FULL ARM key. Pressing the FULL ARM key again will cancel this function. This is useful to the serviceperson when working alone.

SINGLE-ZONE MONITOR - This option allows the user to examine any zone and display its state and analogue value. Once the zone number is entered, say 14, and the RETURN key pressed, it is possible to increment [press the FULL DISARM (+) key] or decrement [press the AUDIBLE SILENCE 1 (-) key] the zone number without having to exit and re-enter this option. The display is shown as follows:

> **AREA-1 14 CLOSED [28]**, if the input is On Line
> **AREA-1 14 CLOSED *28***, if the input is Not On Line
> **AREA-1 14 CLOSED /28/**, if the input is Disabled
> ***AREA-1 14 CLOSED [28]**, if the input is Manually Shunted
> **/AREA-1 14 CLOSED [28]**, if the input is Program Shunted
> **+AREA-1 14 CLOSED [28]**, if the input is both Manually & Program Shunted

☞ The analogue value displayed will increase on systems with long cable runs *due to wire resistance and to a lesser extent increased cable capacitance.*

The piezo-sounder is used in this option to indicate the state of the LEM input under test. The relationship between the beeping sound and the state of the input is as follows:

STATE OF INPUT	PIEZO-SOUNDER
CLOSED	Off
OPEN	Long beep
SHORT	Short beep
DISCON	Continuous

NOTES:

1. The piezo-sounder may be turned off by pressing the AUDIBLE SILENCE 2 key. Press this key again to re-enable the piezo-sounder.

2. The zone description for any zone may be displayed by pressing the HELP key.

3. As in the WALKTEST option above, you may press the FULL ARM key and TIMED BELL panel relay output 7 will trip briefly every time the displayed zone changes state.

TROUBLE-SHOOTING INPUT LOOPS:

The following section is included to give the installer guidance in trouble-shooting zone inputs. **Zone 5** (an odd numbered zone, therefore connected to terminals 6 and 7 of a LEM addressed to 3) has been chosen.

1. In the SINGLE-ZONE MONITOR option, if a 2K2-ohm resistor is connected between terminals 6 and 7, the display will show **AREA-1   5 CLOSED [28]**.

2. If the circuit is opened between terminals 6 and 7, the panel will show
AREA-1   5 DISCON [89].

3. If a short circuit is placed across terminals 6 and 7, the panel will show
AREA-1   5 SHORT [3].

4. If two resistors in series are connected to terminals 6 and 7, the panel will show
AREA-1   5 OPEN [42].

The number in square brackets represents the analogue value of the voltage coming from the LEM zone input and should be within ±2 of this value. By examining different inputs, you will be able to determine the analogue values for all zones and these can be printed or recorded for future reference when trouble-shooting faulty zones. A table of acceptable analogue values follows:

INPUT COND.	MIN.	MAX.	TYP.
SHORT	0	21	3
CLOSED	22	36	28
OPEN	37	55	42
DISCON	56	90	85

These readings will remain near the typical values unless the **resistance of the LEM trunk increases due to excessive length** (around 1500 metres) or until the **limit of cable capacitance** is reached, at which point they will increase as extra cable is added. The system assumes a nominal cable capacity of 50 pf/m to allow 2-km maximum length.

During initialization, zones with marginal responses will also be displayed. Zones with values that are outside of the min./max. range will be individually displayed. (See LEM-LINE INITIALIZATION on page 35 for further information.)

SET IDS/OPTIONS (C key): Both the Service user, user number 1, and the Master user, user number 2, can select this function to set identification codes for the 248 general users. These two users can also assign functions and modes to other users but each will be presented with a different list of functions and modes to choose from. General users, if authorized, can then re-assign their functions and modes to others. At any point, should a general user attempt to enter a function or mode other than that permitted in his or her list, the display will show **** INVALID ENTRY ****. Enter your user code and then press the C key (shift FULL DISARM). The panel will display a flashing sub-menu: **IDS--OPTIONS-NAMES**.
<div align="center">**PROGRAMMING THE PANEL** cont.</div>

IDS (IDENTIFICATION CODES) - To select or change identification codes (IDS), press the FULL DISARM key. The panel will display **ENTER USER NO. 1**. If user number 1 is to be chosen, press the RETURN key. If a user other than number 1 is to be chosen, enter his or her number and then press the RETURN key. The next message displayed will be **ENTER CODE _ _ _ _ _**. User codes can have four or five digits. The five-digit code capability must be enabled by the installer during the powering-up sequence (see page 36). Otherwise, the control panel will default to the four-digit capacity. Four-digit codes are acceptable if the five-digit option has been chosen but, in this case only, the RETURN key must be pressed to complete the entry. If you

☞ have elected to use four-digit codes, enter any numeric code from **1000** up to **9999**. (Note that, unlike in the previous software, *numeric codes 1 to 0999 are not allowed*. This is because the new Duress alarm feature described on page 67 uses a lead 0 numbering scheme.) If you have elected to use five-digit codes, enter any numeric code from **1000** to **32767** but remember that four-digit codes with a five-digit option will require the use of the RETURN key. As a security feature, user codes are never displayed as they are entered because they may be seen by others near the panel or at a remote keypad. Instead, a * will be displayed for every digit entered. After a code is assigned, you must press the RETURN key to advance to the next user number. If this user requires a code, then press the RETURN key and follow the procedure described above. Note: **No two user codes can be the same!!** The panel will test for duplicate codes. If one is entered, the piezo-sounder will beep and the display will show **USER # DUPLICATE**. To exit, press the NO key when the display shows **ENTER USER NO. #**. The **QUIT ?** message will appear and you may press the YES key to exit or any other key to return to the sub-menu.

☞ **REMOVING A USER CODE:** Select IDs as above, enter the user number in question, press the RETURN key, enter a single ***** (AUDIBLE SILENCE 2) for the code, and then press the RETURN key again. This will delete the old code. Press the NO key to quit and the YES key to exit. On a remote keypad press the PART ARM 2 button, **not the * button beside the 0 button**.

RESETTING USER 1 AND 2 IDS: If through the course of staff changes, etc., the Service user's **code** or the Master user's **code** has been lost, then **these two user codes only** may be reset to the factory default value (i.e., Service user 1 will again have code 1010 and Master user 2 will again have code 1020). New codes may then be assigned. All other user codes will remain unchanged!

To perform this reset procedure, open the panel door and press the CPU reset button to the left of the display. Quickly close the door and press the AUDIBLE SILENCE 2 key when the display shows **A100 8A250U 3NOV98**. The piezo-sounder will beep and the display will show **RESET USER 1&2 IDS ?**. Press the YES key to reset the Service user's code to 1010 and the Master user's code to 1020 or the NO key to leave them unchanged.

OPTIONS - To select OPTIONS, press the AUDIBLE SILENCE 2 key. The panel will display **ENTER USER NO. 1**. Enter the number of the user to whom you wish to assign the options
PROGRAMMING THE PANEL cont.

and press the RETURN key. The panel will now display **DISARM NO**. If you do not wish to

allow this general user to disarm the panel, press the RETURN key. The flashing **NO** will remain and the next option will follow. If this option is to be allowed, then press the YES key. This changes the **NO** to a **YES** on the panel to confirm your choice. The next option will then appear, along with **NO**. This procedure must be repeated for this user for all 10 options listed below. The AUDIBLE SILENCE 1 (-) key may be used to return to a previous option. Hint: If you are only changing a few options, you may wish to exit before all 10 options have been displayed. Press the HELP key and the next user will appear. To exit from this option, press the NO key whenever the display shows **ENTER USER NO. #**. The display will now show **QUIT ?** and you may press the YES key to exit or any other key to return to the sub-menu.

The following is a list of all possible options presented to the Master user, user number 2:

DISARM	FULL ARM	SINGLE ZONE SHUNT	SET IDS/OPTIONS
AUDIBLE SILENCE 1	CLEAR DISPLAY	SET DATE/TIME	
AUDIBLE SILENCE 2	SYSTEM LOG	9 KEY	

If the Service user, user number 1 is at the keyboard and has entered his or her user code and selected SET IDS/OPTIONS, the procedure for assigning identification codes is the same as above; however, in the OPTIONS option, a different list is presented.

DISARM	SYSTEM LOG	ASSIGN ZONES/VARS	LITERAL EDIT
FULL ARM	SINGLE-ZONE SHUNT	SET IDS/OPTIONS	
CLEAR DISPLAY	SET DATE/TIME	SERVICE MODE	

NAMES - To select NAMES, press the HELP key. The display will show **ENTER USER NO.   1**. If user number 1 is to be chosen, press the RETURN key. If a user other than number 1 is to be chosen, enter his or her number and then press the RETURN key. The display will show a flashing cursor, /\, in the farthest-left position. Enter a user's name up to a maximum of 11 characters. (See page 4 for information on how to select the letters of the alphabet.) When the entry is complete, make sure that the cursor is at normal shift (up) and then press the RETURN key. The display will now show the next user number. If this user's name is to be entered, press the RETURN key and follow the procedure described above. To exit, press the NO key when the display shows **ENTER USER NO.   #**. The **QUIT ?** message will then appear and you may press the YES key to exit or any other key to return to the flashing sub-menu.

ASSIGN ZONES/VARIABLES (D key): This function is used to enter the actual location of each zone or a description associated with it (e.g., 1. FRONT DOOR, 6. FACTORY PASSIVE, etc.). To select this function, enter the Service user code and then press the D key (shift AUDIBLE SILENCE 1).The panel will display a flashing sub-menu: **DESCS---TYPES--VARS**.

<div align="center">

PROGRAMMING THE PANEL cont.

</div>

ZONE DESCRIPTIONS - To select ZONE DESCRIPTIONS, press the FULL DISARM key. The panel will display **ENTER ZONE NO. 1**. If this is the desired zone, then press the

RETURN key; otherwise, enter the number of the required zone and then press the RETURN key. The display will then show a flashing cursor, ∧, in the farthest-left position. Enter the zone number, followed by a zone description up to 18 characters long. (See page 4 for instructions on the use of the keyboard.) When the entry is complete, make sure that the cursor is at normal shift (up) and then press the RETURN key. The panel will display **ENTER ZONE NO. #** for the next zone in the sequence. Proceed as described above. To exit, press the NO key whenever the display shows **ENTER ZONE NO. #**. The **QUIT ?** message will appear and you may press the YES key to exit or any other key to return to the sub-menu.

ZONE TYPES - To select ZONE TYPES, press the AUDIBLE SILENCE 2 key when the flashing sub-menu is displayed. The panel will then display **SET FROM 1**. If the required zone is number 1, then press the RETURN key; otherwise, enter the number of the required zone and press the RETURN key. The panel will display **SET TO #**. If a range of zones is required, enter the upper limit and press the RETURN key; otherwise, just press the RETURN key. The panel will respond with **AREA-1 ?**. In the same manner as with the OPTIONS option (see page 46), select the appropriate zone type to be allocated to this zone or group of zones. To exit, press the NO key whenever the display shows **SET FROM 1**. The **QUIT ?** message will appear and you may press the YES key to exit or any other key to return to the sub-menu.

SYSTEM VARIABLES - To amend system variables, press the HELP key when the flashing sub-menu is displayed. The system variables will now be presented. In response, enter time values in seconds (e.g., 10 minutes = 600 seconds) or select a condition specified by a numeric entry. Note: The time entries can range from 1 to 9999 seconds and 0 seconds means infinite time (forever). If no entry is required, press the RETURN key to advance to the next item. Use the AUDIBLE SILENCE 1 (-) key to return to the previous entry.

FULL ARM EX TIME 30: This is the delay time in seconds that a user is allowed to exit the premises via any area exit door from the moment the system is placed in FULL ARM mode.

C-EXIT TIME   30: If a C-EXIT (Common-EXIT) zone type has been assigned, this variable sets the amount of entry delay time allowed for entry into the common area.

EXIT-1 TIME   30: If an EXIT-1 zone type has been assigned, this variable sets the amount of exit **and** entry delay time allowed for exit from and entry into area 1.

EXIT-2 TIME   30: If an   EXIT-2 zone type has been assigned, this variable sets the amount of exit **and** entry delay time allowed for exit from and entry into area 2.

EXIT-3 TIME   30: If an EXIT-3 zone type has been assigned, this variable sets the amount of

PROGRAMMING THE PANEL cont.

exit **and** entry delay time allowed for exit from and entry into area 3.

48

EXIT-4 TIME   30: If an EXIT-4 zone type has been assigned, this variable sets the amount of exit **and** entry delay time allowed for exit from and entry into area 4.

SHUNT LIMIT   99: This is the highest zone number that can be shunted. Important zones like FIRENO, PANIC, or HOLDUP should be assigned high zone numbers and this value lowered to prevent the accidental shunting (bypassing) of those zones.

ALERT & DISPLY? 1: This variable is used to enable the control panel and the remote keypad displays to sound piezo-alert warnings on activation of a 24HOUR or FIRENO zone type. Enter a 0 to turn off the piezo-sounder.

COMMON AREA ?   0: If the premises has a common area, such as a lobby, cafeteria, hallway, etc., and protection of this area is desired, set this variable to 1.

FULL ARM DISPLAY 0: This variable controls the action of the display in the FULL ARM mode. It can be set to one of the following values:

   0 - The display remains blank.
   1 - ALERT messages only are displayed.
   2 - ALERT and WARNING messages are displayed.
   3 - ALERT messages, WARNING messages, OPEN zones, and
        DATE/TIME are displayed.
   4 - OPEN zones display zone state plus description.

For example: If, while the panel is armed, an immediate display of an alarm is required, then set the variable to 1.

LOG OUTPUTS ? 0: When a panel relay output or a output C-LEM is operated or reset, this action can be stored in the panel log and simultaneously be printed on a printer. As this action creates unnecessary, wasteful log data, it should only be used in certain instances. If needed, set this variable to 1.

AUDIBLE TECH ? 0: This variable allows for an audible alert from a TECH zone. Change this value to a 1 to cause the piezo-sounder to beep when an alarm occurs on a TECH zone.

RETARD TIME   3: This variable is used to set the amount of retard time that must expire before a FLOW zone type will create an alarm. The allowable values are 1 second to 60 seconds. Values entered outside this range will default to the minimum (3) or maximum (60) values.

PROGRAMMING THE PANEL cont.

RETRIGGER 1: This variable controls the retriggering of the external bell relay during an alarm. It can be set to one of the following values:

0 - The bell relay will reset after the bell time expires and **will not** retrigger on any further zone violations.

1 - The bell relay will reset after the bell time expires and **will** retrigger when a zone is violated.

2 - The bell relay will reset after the bell time expires **only** if all zones on the system have closed (restored). If any of the zones are open (in alarm), then the bell relay will remain operated.

BELL TIME 900: This is the time in seconds that TIMED BELL panel relay output 7 and output C-LEM 7 will operate before an automatic shutdown.

☞ ENABLE DURESS ?   0: The old DURESS function has been changed. This variable is used to activate the revised Duress alarm feature. Leave the variable at 0 to deny the Duress alarm feature or change it to 1 to enable the Duress alarm feature. To create a duress alarm, the user must enter a zero (0) and then their code and then press a *valid* function key (e.g., FULL DISARM). It does not matter what the function is because it will be executed and a Duress alarm sent as well.

☞ TX FULL ARM/DIS ?   0: As each area in the system is armed, a message will be sent to the central/monitoring station indicating the arming of that area. When the last area in the system is armed an *additional* message indicating that now the system is *fully armed* can also be sent to the station. Similarly, when the first area of the system is disarmed, an *additional* message indicating that the system is *disarmed* (because now the system is not fully armed) can be sent to the station. This is of benefit to manual stations; *however*, it can cause problems with the armed/disarmed closing routines in certain automation packages. If desired, change this variable to a 1 to turn on the extra messages.

☞ COMMS TEST   0: This variable is used to cause a periodic communications test to be sent to the central/monitoring station. Such a test can be used to prove the integrity of the system in low traffic applications such as fire alarm panel monitoring, sprinkler riser monitoring, building temperature monitoring, etc.. To select the frequency of the testing, you must enter a numeric value (e.g., 0= No test, 1= Every day, 2= Every second day, 3= Every third day, etc.). The test will occur at 03:00 hours (default time) and this time can be changed by using the SET TIME COMMANDS function (see page 59).

☞ SUPVRY SHUTDOWN   0: This variable is used to allow a fixed number of alarm and restore signals from a sprinkler riser (gate valve, post indicator valve, or pressure drop switches) to be sent to the central/monitoring station, after which no more signals are sent for a period of 90 minutes (5400 seconds) or unless the service technician manually resets the timer either by simply pressing the FULL DISARM key once or by entering his or her code and then pressing the FULL DISARM key. This shutdown does not apply to the FIRENO or FLOW zones!.

SYSTEM VARIABLES RECHECK:

When the **SUPVRY SHUTDOWN   0** variable is displayed, press the AUDIBLE SILENCE 1 (-) key to check the variables. This will start a reverse scroll through the list. When the entire list has been checked, press the NO key and the display will show **QUIT ?**. Press the YES key to exit or the NO key to return to the flashing sub-menu.

LITERAL EDIT (E key): This mode is used by the serviceperson to modify text phrases, command strings, zone responses, etc. For example, to change the designation of an area in the multi-area system to something more descriptive (e.g., AREA-1 to OFFICE, AREA-2 to SHOP, etc.), you may edit literals 150 through 158. To select this mode, enter the Service user code and then press the E key (shift AUDIBLE SILENCE 2). The display will show **ENTER LITERAL NO. 1.** Enter the relevant literal number and press the RETURN key. The display will show the flashing sub-menu **EDIT---COPY--DEFAULT**. Press the FULL DISARM key to select EDIT, delete the current entry (e.g., AREA-1), and enter the new area name (e.g., OFFICE). Press the RETURN key to complete the entry. See page 4 for information on entering names and numbers.

DISABLE MODE (F key): This mode is used by the serviceperson to disable zones. The results are similar to those arising from the SINGLE-ZONE SHUNT function (see page 42); the main difference is that disabled inputs are treated as if they were **no longer on line** (i.e., **no change of any state** is reported). To select DISABLE mode, enter the Service user code and then press the F key (shift FULL ARM). If some zones are already disabled, the message **CLEAR ALL DISABLES ?** will appear. Respond by pressing either the YES or NO key. Pressing the YES key will remove all disables, whereas pressing the NO key will leave the disables in place. Both selections will cause the display to show **DISABLE FROM 1**. Press the NO key to exit or proceed with the rest of this section to disable more zones. Enter the first zone number to be disabled and then press the RETURN key. The display now will show **DISABLE TO #**. Enter the last zone number to be disabled, which may be the same as the first, and then press the RETURN key. The panel display will show **N DISABLES**, where **N** is the number of zones disabled. Exit is automatic. Disabled zones are not cleared on entry to the DISARM mode but the number of disables, if any, is displayed each time any arming or disarming mode is entered.

DAYLIGHT SAVING TIME CHANGE (H key): Any time during the week that the Daylight Saving Time change occurs, enter your user code and then press the H key (shift HELP). When this mode is selected, the display will continuously show **HOUR CHNGE ON SUNDAY** and the time will advance or retard by one hour at 2 a.m. on the following Sunday morning. The panel will figure out whether to advance or retard the hour by looking at the current month. The hour change may be cancelled by reselecting this mode. Once selected, the message **HOUR CHNGE ON SUNDAY** will be automatically cleared when the hour change takes place. If this mode is entered in error, re-enter your user code and press the H key. The display will show **CANCEL HOUR CHANGE** for a moment and the message will be removed.

(IMMEDIATE) COMMAND MODE (I key): This mode is used by the serviceperson to program a command that will be executed by the control panel when the RETURN key is pressed. Command strings should only be entered by experienced personnel as improperly entered data can cause havoc with the panel. To select this mode, enter the Service user code and then press the
I key (shift 1).

NUMBER OF AREAS ASSIGNMENT (L key): This function allows the Service user to program the number of areas to be monitored. Enter the Service user code and then press the L key (shift 2). The display will show **NO. OF AREAS   N,** where **N** is the current number of areas. Enter the number of areas to be monitored and then press the RETURN key to exit.

Note: If you *change the number of areas to a lesser number* (e.g., remove area 6 from a 6-area system to make a 5-area system) after the system has been set up and running, you **must perform** the following steps:

Before you change the number of areas, select the AREA/USER ASSIGNMENT function (see below) and press the NO key to deny each user who could previously arm and disarm an area (area 6 in this example). Next, the **AREA-6** armed/disarmed message must be removed from the display. Select the IMMEDIATE COMMAND MODE mode (see above). The display will be blank but for the flashing cursor at the left. Enter **.15X** [period (shift-shift-FULL DISARM)15X no spaces] where **X** is one less than the number of the area. In our example, 5 being one less than 6, enter **.155** and then press the RETURN key. Select the NUMBER OF AREAS ASSIGNMENT function (see below) and enter the new value for the number of areas (5 in this example).

AREA/USER ASSIGNMENT (M key): This function assigns to all the users of multi-area panels (including Service user number 1 and Master user number 2) the individual areas that they can arm and disarm. Enter the Service user code or Master user code and then press the M key (shift 3). The display will show **ENTER USER NO. 1**. Press the RETURN key to accept user 1, or enter another user number and then press the RETURN key. You may now assign which areas, if any, that user can arm and disarm. The display will now show **AREA-1 NO**, indicating that at this time area 1 is not to be armed and disarmed by that user. Press the RETURN key to accept the display or press the YES key to allow arming and disarming. A yes choice may be changed to no by pressing the NO key. Proceed in a similar manner until all areas have been dealt with. The display will now show the next user number. At this point, you may continue to assign areas to users or you may press the NO key to exit from this function.

RELAY/C-LEM TEST (O key): This function allows all outputs on the panel to be examined and tested. Enter the Service user code and then press the O key (shift 5). The display will show **OUTPUT 1   ON**. The current state of the output, on or off, is indicated and the state may be

changed by pressing the YES key. Use the FULL DISARM (+) key to advance to the next output and the AUDIBLE SILENCE 1 (-) key to back up to the previous output. Press the NO key to quit. The outputs will remain as set. To reset any changed outputs to their normal state, you must disarm the panel.

PRINT REPORTS (P key): This function allows all system reports to be printed. The following reports are available:

      1. SYSTEM VARIABLES   4. ON-LINE REPORT
      2. USER NAMES AND OPTIONS   5. SYSTEM LOG
      3. CHANGED LITERALS

Enter the Service user code and then press the P key (shift 6). The display will show **PRINT ALL REPORTS ?**. Press the YES key to print all the reports or press the NO key to exit. If the YES key is pressed, reports 1, 2, and 3 will be printed. The display will show **PRINTING VARIABLES**. After the variables have been printed, the display will show **PRINT USER IDS ?**. If the YES key is pressed, the display will show **ENTER CODE _ _ _ _ _**. If you wish the user list to include all user codes, then enter the Master user's code and press the RETURN key. If no code or the wrong Master user's code is entered, then the list will not contain the user codes. The panel will then prompt the user with **PRINT ON-L REPORT ?**. Press any key to proceed. The panel will print the on-line report and then the system log. Press the NO key to abort these at any time. Note: this option is not available with DVACS$^{(tm)}$ unless the Model 3302R3 port splitter is installed as part of the system.

RESTART SYSTEM/SOFT START (R key): This function is used to restart the panel without having to open the cabinet door and press the CPU reset button. This capability is essential if the serviceperson is changing the LEM count and requires a re-initialization of the LEM line. Enter the Service user code and then press the R key (shift 7). All outputs will immediately be reset and the usual start-up messages will be displayed. When the display shows **INITIALIZE LEM LINE?**, press the YES key. The display will show **ON-LINE O-->N**, where **O** is the old zone count and **N** is the new zone count. From this moment on, the procedure is the same as for LEM-LINE INITIALIZATION (see page 35).

SET DATA FORMAT (S key): This function allows the panel communications to be configured for connection to a number of devices including a printer, an auto-dial modem, a computer, and the DVACS$^{(tm)}$ network. Enter the Service user code and then press the S key (shift 8). There are many options to be chosen; the actual options presented will depend on the device being configured. Some options require a yes or no selection (e.g., **TRANSMIT NAME YES**, where the flashing **YES** indicates the current setting). Others will require a numeric entry.

☞ The display will show **COMMS MODE   0**. The following chart summarizes the choices:

    0 - Used in a polled environment (e.g., DVACS^(tm), PANELMAN, autodial modem, etc.).
    1 - Used when a serial-input logging printer is directly connected to the panel.
    2 - Used when the panel is both polled and a Model 3302R3 port splitter is connected to
        the panel to permit simultaneous use of a logging printer.

If **0** is the desired selection, press the RETURN key. The display will show **SYSTEM ID 0**. Proceed to SYSTEM ID shown in bold type on page 55.

If a logging printer *only* is desired, enter a 1 and then press the RETURN key. The word length (data bits), parity, and baud rate will be chosen later. When configured for a printer only, the RX panel input is used as a "busy input" from the printer and should normally be held high (+ve) to allow real time events (e.g., arming, disarming, zone shunting, etc.) to be printed. If the printer does not provide a busy output, RX should be linked to +12 volts DC via a 2K2-ohm resistor (see chart below). If a logging printer *and* polling is desired, enter a 2 and then press the RETURN key. The logging printer word length (data bits) and baud rate are fixed at eight data bits and 2400 baud respectively. The *printer parity* must match the polling application (i.e., even parity for DVACS^(tm) , no parity for autodial modem). At this time, RX becomes the receive data line. See complete instructions accompanying the EUROPLEX Model 3302R3 port splitter.

    COMMS MODE 1:   LOCAL PRINTER CONNECTION

                APLEX   PRINTER
                37/J21 -ve (Gnd) .... 7 (Gnd)
                39/J23 Tx .... 3 (Rx)
                40/J24 Rx .... 4 (RTS) On/Off line **

** The On-/Off-line output may vary between printers. The above is valid for the Citizen Model GSX 190 dot-matrix printer (EUROPLEX product code 1510). Consult your serial-interface manual for other printers.

If the Comms Mode was changed to a 1 or 2 and the RETURN key was pressed, the display will show **TRANSMIT NAME   NO**. If the name and address of the installation are *not* to be printed at the start of *any* data sent to the printer, press the RETURN key to proceed. However, if you wish this information to be printed, press the YES key. The display will show **ENTER NAME/ADDRESS** for a moment and then the current name and address, if any. This can be edited or entered as required. This feature is intended for installations where a number of APLEX control panels share a common printer and printing the name allows identification of the data from each control panel. Press the RETURN key to proceed.

PROGRAMMING THE PANEL cont.

The display now shows **SYSTEM ID 0**. This is the APLEX polling address and is used when communicating with the EUROPLEX Model 1431/1432 autodial modem, PANELMAN software (product code 3305AP3), or when connected to the DVACS(tm) network. Any commands sent to a APLEX control panel contain the system ID and the panel will only respond if the ID in the command matches its own system ID. All panels on a common network [as in the case of the DVACS(tm) network] must have a *unique* system ID. Allowable addresses are 1 to 255. If you are using the Model 1431/1432 autodial modem or the PANELMAN program, set this address to 1. If you are using a logging printer only, then leave this value at 0. Press the RETURN key to proceed.

☞ The display will now show **ACCESS CONTROL 543**. This value, from 0 to 543, controls the types of remote commands that can be sent to a APLEX control panel in a polled environment (e.g., when used with a DVACS(tm) network or PANELMAN program) and can be used to restrict remote-control capability on high-security installations. A value of 543 allows **all** commands to be sent and a value of 0 allows only polling. To select a value for access control, consult the table below. If a logging printer only is to be used, this value may be left at 543. Otherwise, decide which commands are to be allowed and add the numbers in the right-hand column of the table for those commands. This number is the access control value. Enter this number into the control panel and press the RETURN key to proceed.

CONTROL FUNCTION	SELECT
Output Control - turn on/off outputs	1
Input Control - shunt/unshunt zones	2
Write Commands - Ids/options, time, etc	4
Read Commands - zone state, output state, literal	8
Write DISARMed - write commands allowed in DISARM mode	16
Read Commands - Ids/options	<u>512</u>
	543

For example: Suppose that only read commands (read zone states, read output states) and write commands (set IDs, options, time, etc.) are allowed when the APLEX control panel is in DISARM mode. Then set the access control to 24 (8 + 16). Press the RETURN key to proceed. The display will now show **LOG FILTER**. All data reported to a central/monitoring station, either on the DVACS(tm) network or through an autodial modem, is obtained from the log that contains a record of *all activity*. The log filter provides a means of filtering this data such that only the required data is reported. The panel defaults to reporting *all logged data*. The log filter can be set to meet the installation requirements by adding up the values, shown in the right-hand column in the table below, of the various data types that are to be reported.

PROGRAMMING THE PANEL cont.

LOG DATA TYPE	SELECT
1 - Zone activations	1
2 - Status changes	2
3 - User actions	4
4 - Output switching	8
5 - Variable values	16
6 - Single-byte variable	32
7 - User-defined message format	64
8 - Date change (never reported)	N/A
9 - Not used	256
10 - Zone shunting	512
11 - Zone unshunting	1024
12 - Zone disabling	2048
13-15 - Not used	<u>4096</u>
	8191

For example: If only zone activations are to be reported, set the log filter to 1. If zone activations and user actions are required, set the log filter to 5 (1 + 4). The default value is all choices (8191). Enter the new value or press the RETURN key to proceed.

The display will now show **DIAL MODE   0**. Press the RETURN key to leave the value at 0 for logging printer only and DVACS[(tm)] operation and the display will show **DATA BITS =8   ?**; in this case, proceed to page 58 where this display is shown in bold type; otherwise, an autodial modem may be connected to the APLEX control panel to allow remote communications over the switched telephone network. A number of choices allow data to be sent to a remote printer or computer. If an autodial modem is connected, set DIAL MODE 0 to 1 or 3. Enter the appropriate value as determined from the following chart and press the RETURN key to proceed.

   0 - No auto-dial modem connected.
   1 - A logging printer is connected to an auto-dial modem at the remote location. When any event is logged by the panel, *but not filtered* by the log filter, the remote location will be dialled immediately and any logged data will be sent to the remote printer. When all the data is sent, the panel will instruct the auto-dial modem to hang up.
   2 - Allows PANELMAN to dial into the panel to perform upload/download functions.
   3 - A personal computer with PANELMAN software or a EUROPLEX Model 1430 auto-answer modem/polling multiplexer interface. The following options appear for dial modes 1, 2, and 3 but they are relevant for dial mode 3 only. The display will show **ACCESS MODE   0**. Leave this value unchanged if unrestricted access is to be allowed when *dialling remotely into* the panel using the PANELMAN program. If you wish to *restrict access* by means of a password,

PROGRAMMING THE PANEL cont.

enter a 1. If you wish to have the panel *dial back to you* after you have previously established contact with the panel, enter a 2. Press the RETURN key and the display will show **ACCOUNT #A   0**. The numbering scheme for a control panel when used with the auto-dial modem is from 000-000 to 099-254. This six-digit value has been broken down into two three-digit values, account #a and account #b. Enter a three-digit value ranging from 000 to 099 in the account #a window. Note that a value up to 127 can be entered in account #a; however, this will create a six-digit account number and most central/monitoring station automation computers cannot handle account numbers greater than five digits. Press the RETURN key and the display will show **ACCOUNT #B   0**. Enter a three-digit value ranging from 000 to 254 and then press the RETURN key.

The display will momentarily show **ACCESS CODE** followed by a blank screen with the cursor flashing at the left. If you have chosen password protection (access mode 1) when dialling into a control panel, enter your password here; otherwise, press the RETURN key. The password may be an alphanumeric string up to 127 characters long. You may have a unique password for every panel because the PANELMAN program will store the password on a per customer basis. Press the RETURN key to proceed.

The display will show **DIAL LIMIT   5**. This value may be changed to reflect the number of times that an attempt is made to call out to the central/monitoring station. The maximum allowed value is 15. The panel will check both stored telephone numbers in attempting to dial out and, if the dial limit is reached, the flashing alert message **CALL NOT ANSWERED** will be displayed. Enter a new value or press the RETURN key to proceed.

The display will show **ENTER DIAL COMMAND** for a moment, followed by the dial com-mand **AT E0 X2 S0=8 DP**. This command is sent to the auto-dial modem ahead of the telephone number and tells the auto-dial modem to listen (AT), turn the echo off (E0), wait for dial tone (X2), set the auto-answer to eight rings (S0=8), and choose the dialling method to use (default command is DP for pulse dialling). You may edit this command as necessary; however, you should check with the factory to ensure that you are using the correct command structure. The most common change will be to edit DP to DT for tone dialling. For more details on dial com-mands, consult any commercial auto-dial modem manual. Press the RETURN key to proceed.

The display will now show **ENTER TEL. NO. 1**, followed in a moment by a blank screen. Enter the telephone number of the auto-dial modem at the remote location. A two-second pause between numbers can be included by entering a comma (shift shift AUDIBLE SILENCE 1) (e.g., 9,4167548992). Press the RETURN key to proceed.

The display will now show **ENTER TEL. NO. 2**. If an alternative location is available for use when no connection can be made with the first number, then enter that telephone number; otherwise, either leave this entry blank or re-enter the first number. Press the RETURN key to proceed.

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PROGRAMMING THE PANEL cont.

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If access mode 2 (the dial-back option) was chosen above, the display will now show **ENTER DIAL-BACK NUM,** followed in a moment by a blank screen. Enter a telephone number that the panel can call to allow linking to the PANELMAN program. Press the RETURN key to proceed. The display will now show **TRANSMIT NAME YES** or **TRANSMIT NAME   NO**. Press the YES key to select yes, the NO key to select no, or the RETURN key to maintain the current setting. If no is selected, the display may show **DATA BITS =7 ?** or **DATA BITS =8 ?** (proceed to the next paragraph). If the panel is in dial mode 1 and yes is selected, the name and address of the installation will be transmitted to a remote printer every time that data is sent. This allows any EUROPLEX 3000 series control panel to access a common remote printer by ensuring that the data from each panel can be uniquely identified on the printout. When yes is selected, the display will show **ENTER NAME/ADDRESS** for a moment and then the current name and address, if any. This can be entered or edited as required. Press the RETURN key to proceed.

The display may now show **DATA BITS =7 ?** or **DATA BITS =8 ?**. When the panel is sending or receiving data, it will transmit or listen for a seven-bit or eight-bit data word. In some applications, the word length must be changed. If the panel is in dial mode 1, the word length of the remote printer may be already set as seven bits long. When the panel is in dial mode 3, the word length *must* be eight bits long for either remote or local use with PANELMAN program and for remote communication with the EUROPLEX Model 1430 auto-answer modem/polling multiplexer interface. Press the RETURN key to accept the value shown or press the NO key to change to the other value. If the NO key is pressed to select an eight-bit word, the display will show **PARITY =EVEN**. As above, if the dial mode is 3, *no parity* is required for remote use with PANELMAN program or with the Model 1430 auto-answer modem/polling multiplexer interface. Press the YES key to accept even parity or press the NO key to select no parity. If the NO key is pressed, the display will show **PARITY =NONE** for a moment (if the NO key was pressed previously to change an eight-bit word to a seven-bit word, the parity is automatically set to even).

The display may now show **BAUD RATE =150   ?**. This is the default communication speed. Depending on the application, this may be changed to other speeds by pressing the NO key and then pressing the RETURN key when the desired value appears. To leave this value unchanged, press the RETURN key. The panel now returns to date and time.

SET DATE/TIME (T key): In this function, the existing date and time will be displayed using a numeric format. A flashing cursor will indicate the first of the characters that are to be updated and the BACKSPACE and YES (forward-space) keys may be used to position the cursor. To select this function, enter your user code and then press the T key (shift 9). The display is in the format MM/DD/YY HH:MM:SS and the date and time must be entered in this way. Therefore, to enter Feb. 14, 1987, 2:46 p.m., enter 02/14/87 14:46:00. Use either the YES key to forward-space to the next number location or the FULL ARM key to enter a forward slash **(/)** and the HELP key to enter a colon **(:)**. Then press the RETURN key. Note that 24-hour military time

is used and **** INVALID ENTRY **** will be displayed if the correct format is not used. The display will show **ENTER DAY NO. 1**. Since the panel can perform time tasks, it must be told what day of the week it is. Enter 1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday, etc. Press the RETURN key and the panel will exit to the date and time.

SET TIME COMMANDS (U key): This function provides a convenient method for setting all time commands on the panel. Enter your user code and then press the U key (shift BACKSPACE). The display will momentarily show **SET TIME COMMANDS**. A time command is a literal that contains a time (hour:min.) and an action that is executed at that specified time. The panel contains a number of default time commands (daylight saving time change, closing times, comms test time, etc.). This function will search through all system literals and display any time commands it finds. When a time command is displayed, only a numeric entry is allowed and only the time part of the literal can be modified. Enter **24 00** as a time value **if you do not want a particular time task to execute**. Once the time is correct, press the RETURN key to proceed to the next time command. Repeat this process until all times have been reviewed. Press the NO key at any time to exit from this function.

TIME ADVANCE (! key): This function is used to test time tasks in the panel without waiting for the real time to occur. Enter the Service user code and then press the ! key (shift shift YES). The time clock in the panel will now be reset to five seconds before the first chronological time task. The panel will display **TIME ADVANCE** and the task will execute. This procedure must be repeated for each time task. When all tests are finished, the original date and time and day of the week **must be re-entered** (see SET DATE/TIME, page 58).

QUICK PROGRAMMING GUIDE

The following section provides a quick summary of the programming procedure for the APLEX Model 3100E8 8-area control panel. It is assumed that the wiring is completed and that the control panel is now ready to be programmed.

PROGRAMMING THE 8-AREA CONTROL

After the APLEX control panel has been powered up, the following steps must be taken to set up the panel for use.

1. The number of areas to be monitored must be determined.
2. Users must be assigned the areas they are to arm and disarm.
3. Users must be given their user identification code, selected options, such as disarm, clear display, audible silence, single-zone shunt, etc., and names.
4. For each area, zone descriptions must be entered and zone types must be assigned.
5. Exit and entry times must be set.
6. Literal edit may be used to name areas.
7. Area status messages must be activated to complete the set-up procedure.

NUMBER OF AREAS ASSIGNMENT (L key): This function allows the programming of the number of areas to be monitored. Enter the Service user code and then press the L key (shift 2). The display will show **NO. OF AREAS   N**, where **N** is the current number of areas. Enter the number of areas to be monitored and press the RETURN key to exit. (See also page 52.)

AREA/USER ASSIGNMENT (M key): This function assigns to the users of 8-area panels the individual areas they can arm and disarm. Enter the Service user code and then press the M key (shift 3). The display will show **ENTER USER NO. 1**. Press the RETURN key to accept user 1 (the Service user), or enter another user number and then press the RETURN key. You may now assign which areas, if any, that user can arm and disarm. The display will now show **AREA-1 NO**, indicating that at this time area 1 is not to be armed and disarmed by that user. Press the RETURN key to accept the display or press the YES key to allow arming and disarming. A yes choice may be changed to no by pressing the NO key. Proceed in a similar manner until all areas have been dealt with. The display will now show the next user number. At this point, you may continue to assign areas to users or you may press the NO key to exit from this function.

SET IDS/OPTIONS (C key): This function requires the Master user's code to permit assigning identification codes, options from his or her menu, and names to each general user. If a general user attempts to enter a function or mode other than that permitted, the display will show **** INVALID ENTRY ****. Enter the Master user's code and then press the C key (shift FULL

DISARM). The panel will display a flashing sub-menu: **IDS--OPTIONS-NAMES**.

IDS (IDENTIFICATION CODES) - To select or change identification codes (IDS), press the FULL DISARM key. The panel will display **ENTER USER NO. 1**. The Service user is always user number 1 and the Master user is always user number 2. General users are user numbers 3 through 250. Enter the desired user number and then press the RETURN key. The next message displayed will be **ENTER CODE _ _ _ _**. User codes can have four or five digits (see page 36). If you are using four-digit codes, enter any numeric code from **1000** up to **9999**. (Note that, unlike in the previous software, *numeric codes 1 to 0999 are not allowed*. This is because the new Duress Alarm feature described on page 67 uses a lead 0 numbering scheme.) If you are using five-digit codes, enter any numeric code from **1000** to **32767**. After a code is assigned, you must press the RETURN key to advance to the next user number. If this user requires a code, then press the RETURN key and follow the procedure described above; if not, then enter the required user number and proceed as above. To exit, press the NO key when the display shows **ENTER USER NO. #**. The **QUIT ?** message will appear and you may press the YES key to exit or any other key to return to the sub-menu.

REMOVING A USER CODE: Select IDs as above, enter the user number in question, press the RETURN key, enter a single ***** (AUDIBLE SILENCE 2 on panel, PART ARM 2 on keypad) for the code, and then press the RETURN key again. This will delete the old code. Press the NO key to quit and the YES key to exit.

RESETTING USER 1 AND 2 IDS: If through the course of staff changes, etc., the Service user's **code** or the Master user's **code** has been lost, then **these two user codes only** may be reset to the factory default value (i.e., Service user 1 will again have code 1010 and Master user 2 will again have code 1020). New codes may then be assigned. All other user codes will remain unchanged!

To perform this reset procedure, open the panel door and press the CPU reset button to the left of the display. Quickly close the door and press the AUDIBLE SILENCE 2 key when the display shows **A100 8A250U 29MAY00**. The piezo-sounder will beep and the display will show **RESET USER 1&2 IDS ?**. Press the YES key to reset the Service user's code to 1010 and the Master user's code to 1020 or the NO key to leave them unchanged.

OPTIONS - To select OPTIONS, press the AUDIBLE SILENCE 2 key. The panel will display **ENTER USER NO. 1**. Enter the number of the user to whom you wish to assign the options and press the RETURN key. The panel will now display **FULL DISARM   NO**. If you do not wish to allow this general user to fully disarm the panel, press the RETURN key. The flashing **NO** will remain and the next option will follow. If this option is to be allowed, then press the YES key. This changes the **NO** to a **YES** on the panel to confirm your choice. The next option will then appear, along with **NO**. This procedure must be repeated for this user for all options

<div align="center">**QUICK PROGRAMMING GUIDE** cont.</div>

listed below. The AUDIBLE SILENCE 1 (-) key may be used to return to a previous option. To exit from this option, press the NO key whenever the display shows **ENTER USER NO. #**. The display will now show **QUIT ?** and you may press the YES key to exit or any other key to return to the sub-menu.

The following is the Master user's list of all possible options:

DISARM	CLEAR DISPLAY	9 KEY
AUDIBLE SILENCE 1	SYSTEM LOG	SET IDS/OPTIONS
AUDIBLE SILENCE 2	SINGLE-ZONE SHUNT	
FULL ARM	SET DATE/TIME	

NAMES - To select NAMES, press the HELP key. The display will show **ENTER USER NO.   1**. If user number 1 is to be chosen, press the RETURN key. If a user other than number 1 is to be chosen, enter his or her number and then press the RETURN key. Now you may enter the user's name. (See page 4 for information on entering letters of the alphabet.)

ASSIGN ZONES/VARIABLES (D key): There are nine instant-acting area zone types in the APLEX 3100E8 8-area control panel, one for each of the individual areas and one for the common area. There are also five exit/entry zone types and two follower zone types. In addition, there are a number of other zone types that can be used for supervisory functions: technical, gate, pressure, etc. (Zone types are explained in detail on pages 30 to 34.) To select this function, enter the Service user code and then press the D key (shift AUDIBLE SILENCE 1). The display will show the sub-menu **DESCS---TYPES--VARS**.

DESCS - Press the FULL DISARM key to select DESCS. The panel will display **ENTER ZONE NO. 1**. If this is the desired zone, then press the RETURN key; otherwise, enter the number of the required zone and then press the RETURN key. The display will then show a flashing cursor, /\, in the farthest-left position. Enter the zone number, followed by a zone description up to 18 characters long. (See page 4 for instructions on the use of the keyboard.) When the entry is complete, make sure that the cursor is at normal shift (up) and then press the RETURN key. The panel will display **ENTER ZONE NO. #** for the next zone in the sequence. Proceed as described above. To exit, press the NO key whenever the display shows **ENTER ZONE NO. #**. The **QUIT ?** message will appear and you may press the YES key to exit or any other key to return to the sub-menu.

TYPES - Press the AUDIBLE SILENCE 2 key to select TYPES and then assign the appropriate zone type (see pages 30 to 34) to the relevant zone numbers. When all the zone types have been assigned, press the NO key to exit from this selection. Then, when the display shows **QUIT ?**, press the NO key to return to the flashing sub-menu.

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QUICK PROGRAMMING GUIDE cont.

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VARS - Press the HELP key to select VARS to set the entry/exit delay times for areas 1 through

4 (Exit-1 Time, Exit-2 Time, etc., see pages 48 to 49) and, if applicable, the entry delay time for the common area (C-Exit Time), see page 48. Note that the **same time is used for both exit and entry**. If no delay is required, then you may set the exit/entry time value to zero. As an added feature, the Full Arm Ex Time variable (see page 48) allows a user a given amount of time to exit when **all** areas are armed at once by using the FULL ARM key.

LITERAL EDIT (E key): To change the designation of an area to something more descriptive (e.g., AREA-1 to OFFICE), select the LITERAL EDIT function. Enter the Service user code, and then press the E key (shift AUDIBLE SILENCE 2). The display will show **ENTER LITERAL NO. 1**. The descriptions for the eight areas and the common area are stored in literals 150 to 158; literals 150 through 157 contain the phrases "AREA-1" through "AREA-8" respectively and literal 158 contains the word "COMMON". Enter the relevant literal number and
press the RETURN key. The display will show the flashing sub-menu **EDIT---COPY--DEFAULT**.

EDIT - Press the FULL DISARM key to select EDIT. Press and hold the SHIFT key until the current entry (e.g., AREA-1) is deleted. Enter the new area name (e.g., OFFICE) up to a maximum of six characters; position the cursor up; and then press the RETURN key to complete the entry. Continue in this manner for the rest of the areas. (See the APLEX/APLEX INSTALLER SET-UP BOOKLET for more detailed instructions for this procedure.) It is good practice to note down the names given to the various areas so that in the future a serviceperson can relate the names to the previous area numbers.

ACTIVATING AREA STATUS MESSAGES

If this is the first activation of the panel or an activation following a COLD START with ZAP, then the final step in the installation of an 8-area system requires you to arm each individual area once. This action causes the panel to display the area status messages. For area 1, enter your user code and then press the 1 key. For area 2, enter your user code and then press the 2 key. And so on. If an area begins to arm, enter your user code and then press the appropriate number key to disarm that area. The panel will then display the area disarmed status message. If the display shows **CANNOT ARM**, the area will not arm; however, the panel will display a list of the open zones and then the area disarmed status message. You may either shunt (by-pass) those zones or close them for a moment to permit the arming.

C-LEM INSTALLATION

Model 1101C-LEMs or Model 1166 6-Input/6-Output Modules may be installed to allow arming

QUICK PROGRAMMING GUIDE cont.

and alarm outputs for each individual area. These dry contacts may be used to show area status on an LED display or to allow the system to be monitored by a central/monitoring station using a digital communicator or other transponder-type device. If the central/monitoring station is equipped with the EUROPLEX 4100 DVACS[tm] receiver, the C-LEMs are unnecessary as **all** zone, user, arm/disarm, and diagnostic information will be transmitted to the station.

The following chart summarizes the area number and the associated C-LEM addresses:

AREA	ARMED	ALARM	EXIT BUZZER
1	21	31	41
2	22	32	42
3	23	33	43
4	24	34	44
5	25	35	-
6	26	36	-
7	27	37	-
8	28	38	-
COMMON	29	39	-

SYSTEM OUTPUTS common to all areas:

Timed Bell (panel relay)	7
Latched Internal Bell (C-LEM)	10
Dialler/Transponder (panel relay)	1 (fail alarm)

This completes the set-up procedure for an 8-area installation.

OPERATING THE PANEL

This section details the functional operation of the panel when it is armed and disarmed. Additional information about some other features is also provided.

ARMING

Areas 1 through 4 have exit/entry timers and can be armed from within the protected area. To arm these areas, enter your user code and then press the number key that represents that area. If all zones in the area are closed, then the display will show **AREA-N ARMED**. The relevant area output C-LEM (if used) will operate to indicate that the area is now armed. (See page 64 for C-LEM assignments.) If the exit/entry time variable has been set to a value other than zero, then the piezo-sounder(s) will beep and the relevant EXIT remote buzzer output C-LEM (if used) will operate to give an audible indication that it is time to leave. If any zones are open, the piezo-sounder(s) will beep and the display will show **CANNOT ARM**, followed by a list of the open zones. If an open zone cannot be closed, see page 42 for information on shunting that zone.

The user must now follow the exit path and leave the area through an EXIT zone. Areas 1 and 2 can also have exit-path protection zones. These are known as FOLWR1 and FOLWR2 zone types respectively. Straying from the exit path into other protected zones will cause a full intruder alarm condition. At the expiry of the exit time, the piezo-sounder(s) will stop beeping and the relevant C-LEM will reset. The area is now armed.

If an exit door in any individual area remains open at the end of the exit time for that area, then a full alarm condition will result. The exit zone that is open will be logged and the display will show the flashing alert message ***IMPROPER CLOSING***, the flashing alert message ****INTRUDER ALARM****, and a flashing zone description.

When both all areas are armed, then the common area will also be armed and the COMMON AREA armed output C-LEM (if used) will operate. The display will blank indicating that **all** areas are armed.

DISARMING

An entry into any of areas 1 through 4 will cause the piezo-sounder(s) to start beeping and the relevant EXIT remote buzzer output C-LEM (if used) to operate. The user must then disarm the area within the entry time. To disarm an area, enter your user code and then press the number key that represents that area. If excessive time is taken to disarm the area, a full alarm condition will result. If this occurs, the EXIT zone that caused the alarm will be logged. When the area is finally disarmed, the display will show the flashing alert message ***SLOW ENTRY ALARM***, the flashing alert message ****INTRUDER ALARM****, and a flashing zone description.

OPERATING THE PANEL cont.

In addition, when an individual area is disarmed, the common area is disarmed automatically and the armed output C-LEMs (if used) for both that area and the common area are reset.

INTRUDER ALARM

When an intrusion occurs on an instant-acting zone, then INTRUSION panel relay output 1 and output C-LEM 1, INTERNAL BELL output C-LEM 10, TIMED BELL panel relay output 7 and output C-LEM 7, and the individual AREA ALARM output C-LEM will operate. The display will show the flashing alert message **** INTRUDER ALARM ****, alternating with a flashing zone description of the first zone to trip. If the intrusion involves an timed exit/entry door, then at the expiry of the exit time the flashing alert message ***SLOW ENTRY ALARM*** (see below) will be displayed, along with the previous alert message and zone description. If the intruder ventures into other areas, then the first zone to trip in each new area will also be displayed. At the end of the bell cut-off time, all panel relays and C-LEMs except C-LEM 10 will be reset. The outputs can also be cancelled by disarming an area. If this is done, all panel outputs will be turned off and the individual AREA ALARM output C-LEM for that area will also be turned off. Individual output C-LEMs for the other areas are not affected.

SLOW ENTRY ALARM FEATURE - When an area is armed, *entry* through an EXIT zone will cause the piezo-sounder to start beeping for the amount of time set in the Exit Time variable (see page 48). This is to remind the user to disarm the panel. If the user waits too long, the entry time will expire and a full intruder alarm will occur. The display will show the flashing alert message ***SLOW ENTRY ALARM***, alternating with a flashing alert message and zone description.

ACKNOWLEDGING ALARMS

Whenever the piezo-sounder is beeping and a flashing message appears on the display (e.g., **** FIRE ALARM **** or **** INTRUDER ALARM ****, these can be cleared by acknowledging the alarm. To do this, enter your user code and then press the 0 (zero) key. The panel will momentarily show **CLEAR DISPLAY** and then return to date and time.

RESETTING OUTPUTS

Whenever an alarm condition results in a panel relay or C-LEM being operated, selected outputs can be turned off by acknowledging alarms (see above) or by fully disarming the panel. To fully disarm the panel, enter your user code and then press the FULL DISARM key. In addition, selected users can also use the AUDIBLE SILENCE 1 or 2 key to turn off panel outputs. Enter your user code and then press either the AUDIBLE SILENCE 1 or the AUDIBLE SILENCE 2 key.

OPERATING THE PANEL cont.

ADDITIONAL NOTES CONCERNING PANEL OPERATION

☞ **DURESS ALARM FEATURE** - A Duress alarm feature is available that will allow the user to transmit a duress alarm to the central/monitoring station while simultaneously executing a *valid* function or mode change. The Duress alarm feature must be activated by the serviceperson (see Enable Duress variable, page 50).

To create a duress alarm, enter a zero (0) before your code and then press a valid function or mode key (e.g., 0 + 1234 + FULL DISARM). The function will be executed and a silent duress alarm sent to the central/monitoring station.

SMOKE DETECTOR RESET FEATURE - If you are using smoke detectors that latch up in alarm and require temporary removal of DC power to allow them to reset, then you may use C-LEM 19 to provide this power interruption. Connect the power feed to the smoke detectors through the normally closed contacts of the C-LEM (see page 23).

When a fire alarm occurs and the panel is disarmed or the alarm condition is acknowledged, FIRE ALARM panel relay output 2 is turned off and output C-LEM 19 will operate for approximately five seconds and then reset. This will interrupt the power to the smoke detectors allowing them to reset.

SPRINKLER TRANSFORMER - If the APLEX control panel is used to monitor a sprinkler riser or a fire alarm panel, then the EUROPLEX Model 1055 sprinkler transformer **must be used** to provide AC power to the panel.

NOTES CONCERNING THE MODEL 1431/32 AUTO-DIAL MODEMS

AUTO-DIAL MODEMS

This section describes the connection and operation of the Model 1431/32 Hayes[tm]-compatible auto-dial modem to the APLEX control panel.

GENERAL INFORMATION

The Model 1431/1432 auto-dial modem is used to allow communication between any of the EUROPLEX 3000 series control panels and an off-site computer using the PANELMAN software or a central/monitoring station equipped with the Model 1430 auto-answer modem/ EUROPLEX 4000 series polling multiplexer interface. The auto-dial modem is usually installed inside the EUROPLEX 3000 series subscriber's control panel and is connected to the serial communications port of the panel which provides 12 volts DC power and the serial data to operate the modem. An 8-conductor modular cord connects the modem to the telephone company CA-38A jack.

INSTALLATION

The Model 1431/1432 auto-dial modem comes with an 8-conductor modular cord and mounting hardware. This hardware must be used to satisfy ULC requirements. Slide the nylon bushing onto the threaded stud on the back of the control panel. Note the clearance hole in the modem beside the telephone jacks. Remove the protective backing from the foam tape on the modem and then position the modem clearance hole over the stud and press the lower end of the modem onto the steel box. Place the flat washer on the stud and use the hex nut to secure the top of the modem.
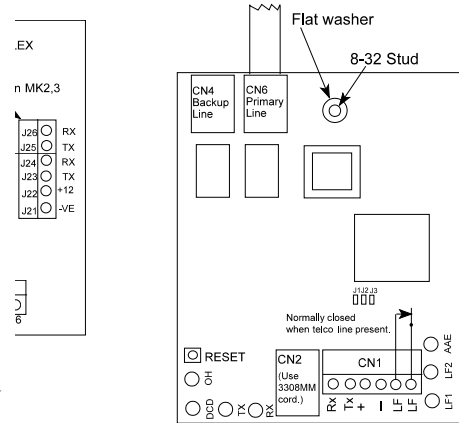
WIRING

Prepare a suitable length of 4-conductor cable and connect the 6-pin terminal block to the J block or serial communications port of the control panel printed circuit board as shown in the chart on page 69.

1431/ 1432	APLEX MK2 J Block	APLEX MK3 J Block	APLEX MK4 Comms Port	MIDIPLEX J Block	DIRECTPLEX
Rx	J25	J23	TX	J23/TX	5
Tx	J26	J24	RX	J24/RX	6
+	J22	J22	+12	J22/+12	3
-	J21	J21	0V	J21/0V	4
LF	Connect to a LEM zone input for line fault monitoring.				Zone input
LF	Connect to a LEM zone input for line fault monitoring.				Zone input

The final step is to connect the telephone line to the modem. A Model 1431 auto-dial modem has only one telephone line input. Plug one end of the 8-conductor modular cord into the modular jack CON 4 and plug the other end of the cord into the CA-38A jack. The CA-38A jack must be wired as shown in Fig. 1 to allow the line seizure relay to control the "house" phone. A Model 1432 auto-dial modem has two telephone line inputs, one for the primary line and a second one for the backup line and may be used for Sprinkler Supervisory/Fire Alarm Panel monitoring. Line fault detection is built into both inputs and the modem automatically switches to the operating line.

PROGRAMMING THE CONTROL PANEL FOR USE WITH THE AUTODIAL MODEM

The Model 1431/1432 auto-dial modem uses the Hayes^{TM} modem instruction set. These coding commands are contained in all EUROPLEX control panels that have the following first line on their EPROM labels. Generally, any control panel is modem-compatible that has 1010 as the default Service user code and 1020 as the default Master user code.

Model	EPROM Label	Model	EPROM Label
3008	DXOSLB18 31/10/95 or later	3030E8 + variants	A8*99 MK2/3/4
3008BF	DXOSLF18 31/10/95 or later	3030M + variants	M1*99
3016 + variants	M1*36	3030M8 + variants	M8*99
3016-2 + variants	M2*36	3100E/M + variants	A1*250 MK2/3/4
3030E + variants	A1*99 MK2/3/4	3100E/M8 + variants	A8*250 MK 2/3/4

 * May be E(nglish) or F(rench).

Fig.1 Connecting the Model 1431/1432 Modem to an APLEX/MIDIPLEX Control Panel

To CA-38A jack

APLEX/MIDIPLEX
PCB

J Block on MK2,3

MK2
J26 RX → to Tx
J25 TX → to Rx
MK3,4
J24 RX
J23 TX
J22 +12
J21 -VE

31 32 33 34 35 36

CN4
Backup
Line

CN6
Primary
Line

JUMPER CHART
J1 & J2: AUTO ANSWER
OFF OFF   DISABLED
ON OFF   AA 1 RING,1200 BAUD
OFF ON   AA 8 RINGS,2400 BAUD
ON ON   AA 8 RINGS,1200 BAUD

J3:OFF HOOK & NO DATA -WATCH
                              DOG
ON   ENABLED
OFF   DISABLED

J1J2J3

Normally closed
when telco line present.

RESET

OH

DCD   TX   RX

CN2
(Use
3308MM
cord.)

CN1

Rx Tx + _ LF LF

AAE

LF2

LF1

DUALLEM (In panel, select
TELFLT zone type.)

25
26
27

1
2
3
4
A
B
C
D

9
10
11
12
E
F
G
H

5 6 7 8

2k2   2k2

CA-38A JACK

Incoming line

TIP
RING

TIP1
RING1

To telephone set

4   5
3   6
2   7
1   8

When the modular plug is removed, internal
shorting bars link 5-8 and 4-1 providing
normal telephone service.

To 1431 modem

NOTES CONCERNING THE MODEL 1431/32 AUTO-DIAL MODEMS cont.

The SET DATA FORMAT function allows the panel communications port to be configured for connection to a number of devices including a printer, an autodial modem, a computer, and the DVACS^{tm} network. Enter the Service user code and then press the S key (shift 8). There are many options to be chosen; the actual options presented will depend on the device being configured. Some options require a yes or no selection (e.g., **PARITY =EVEN**, where **EVEN** indicates the current setting). Others will require a numeric entry.

The display will show **COMMS MODE   0**. This is the first option presented in this function. If the only equipment connected to the communications port is the Model 1431/1432 autodial modem, leave the value unchanged. Press the RETURN/ENTER key. The display will show **SYSTEM ID   0**. Enter 1 and then press the RETURN/ENTER key. Proceed to the next paragraph to continue. If a Model 3302R3 port splitter that permits local logging of activity is part of the system, enter a 2. Press the RETURN/ ENTER key. The display will show **TRANSMIT NAME   NO**. If you wish the site name to be printed on *every* logged event, press the YES key; otherwise, press the RETURN/ENTER key. If the YES key is pressed, the display will show **ENTER NAME/ADDRESS** for a moment and then the current name and address, if any. The name and address can be entered or edited as required (see any EUROPLEX control panel manual for information on how to select the letters of the alphabet). Hint: If you wish to view, enter, or edit the name and address information stored in the panel after the initial activation of any EUROPLEX series 3000 control panel, this is the easiest way to access this entry. Press the RETURN/ ENTER key to proceed. The display will show **SYSTEM ID   0**. Enter a 1 and then press the RETURN/ENTER key.

The display will now show **ACCESS CONTROL   543**. This value, from 0 to 543, controls the types of remote commands that can be sent to a control panel when it is used with PANELMAN software. A value of 543 *allows all commands* to be executed and a value of 0 *denies them all*. To select a value for access control, consult the table below. Decide which commands are to be allowed and add the numbers in the right-hand column of the table for those commands.

The total of the numbers is the access control value. Enter this number into the panel and then press the RETURN/ENTER key to proceed.

CONTROL FUNCTION	SELECT
Output Control - turn on/off outputs	1
Input Control - shunt/unshunt zones	2
Write Commands - IDs/options, time, etc.	4
Read Commands - zone state, output state, literal	8
Write DISARMed - Write commands allowed only in DISARM mode	16
Read User Information - Codes (Ids) and options	<u>512</u>
Total	543

For example: Suppose that only read commands (read zone states, read output states) and write commands (set IDs, options, time, etc.) are to be allowed when the panel is in the DISARM mode. Then set the access control to 24 (8 + 16). Press the RETURN/ENTER key to proceed.

The display will now show **LOG FILTER   8191**. All data reported to a central/monitoring station, either on the DVACS^tm network or through the autodial modem, is obtained from the panel log that contains a record of *all activity*. The log filter provides a means of filtering this data such that only the required data is reported. The panel defaults to reporting *all logged data*. The log filter can be set to meet the installation requirements by adding up the values, shown in the right-hand column in the table below, of the various data types that are to be reported.

LOG DATA TYPE	SELECT
1 - Zone activations	1
2 - Status alert messages	2
3 - User actions	4
4 - Output switching	8
5 - Variable values	16
6 - Single-byte variable	32
7 - User-defined message format	64
8 - Date change (never reported)	N/A
9 - Not used	256
10 - Zone shunting	512
11 - Zone unshunting	1024
12 - Zone disabling	2048
13-15 - Not used	4096
Total	8191

For example: If only zone activations are to be reported, set the log filter to 1. If zone activations

and user actions are required, set the log filter to 5 (1 + 4). The default value is all choices, 8191. Enter the new value or press the RETURN/ENTER key to proceed. **Warning: If an even number is entered, no zone alarms will be transmitted!**

The display will now show **DIAL MODE   0**. When the autodial modem is connected, set the dial mode to 1 or 3. Enter the appropriate value as determined from the following list and press the RETURN/ENTER key to proceed.

   0 - No autodial modem connected.

   1 - A logging printer is connected to an autodial modem at the remote location. When any event is logged by the panel, *but not filtered* by the log filter, the remote location will be dialled

immediately and any logged data will be sent to the remote printer. When all the data is sent, the panel will instruct the auto-dial modem to hang up.

2 - Allows PANELMAN to dial into the panel to perform upload/download functions.

3 - A personal computer with PANELMAN software or a Model 1430 auto-answer modem/polling multiplexer interface is located in a central/monitoring station. The following options appear for dial modes 1, 2, and 3 but they are relevant for dial mode 3 only. The display will show **ACCESS MODE**   **0**. Leave this value unchanged if unrestricted access is to be allowed when *dialling remotely into* the panel using the PANELMAN software. If you wish to *restrict access* by means of a password, enter a 1. If you wish to have the panel *dial back to you* after you have previously established contact with the panel, enter a 2. Press the RETURN/ ENTER key and the display will show **ACCOUNT #A**   **0**. The numbering scheme for a control panel when used with the auto-dial modem is from 000000 to 099254. This 6-digit value has been broken down into two 3-digit values, account #a and account #b. Enter a 3-digit value ranging from 000 to 099 in the account #a window. Note that a value up to 127 can be entered in account #a; however, this will create a 6-digit account number and the central/ monitoring station automation computers cannot handle numbers greater than five digits. Press the RETURN/ ENTER key and the display will show **ACCOUNT #B**   **0**. Enter a 3-digit value ranging from 000 to 254 and then press the RETURN/ENTER key.

The display will momentarily show **ACCESS CODE** followed by a blank screen with the cursor flashing in the left-most position. If you have chosen password protection (access mode 1) when dialling into a control panel, enter your password here; otherwise, press the RETURN/ENTER key. The password may be an alpha-numeric string up to 127 characters long. You may have a unique password for every panel because the PANELMAN program will store the password on a per customer basis. Press the RETURN/ENTER key to proceed.

The display will show **DIAL LIMIT**   **5**. This value may be changed to reflect the number of times that an attempt is made to call out to the central/monitoring station. The maximum allowed value is 15. The panel will check both stored telephone numbers in attempting to dial out and if the dial limit is reached, the flashing alert message **CALL NOT ANSWERED** will be displayed. Enter a new value or press the RETURN/ENTER key to proceed.

The display will show **ENTER DIAL COMMAND** for a moment, followed by the dial command **AT E0 X2 S0=8 DP**. This command is sent to the auto-dial modem ahead of the telephone number and tells the auto-dial modem to listen (AT), turn the echo off (E0), don't wait for dial tone (X2), set the auto-answer to eight rings (S0=8), and the dialling method to use (default command is DP for pulse dialling). You may edit this command as necessary; however, you should check with the factory to ensure that you are using the correct command structure. The most common change will be to edit DP to DT for tone dialling. For more details on dial

commands, consult any commercial auto-dial modem manual. Press the RETURN/ENTER key to proceed.

The display will now show **ENTER TEL. NO. 1** followed in a moment by a blank screen. Enter the telephone number of the auto-dial modem at the remote location. A 2-second pause between numbers can be included by entering a comma (shift shift PART ARM 1) (e.g., 9,4167548992). Press the RETURN/ENTER key to proceed.

The display will now show **ENTER TEL. NO. 2**. If an alternative location is available for use when no connection can be made with the first number, then enter a telephone number; otherwise, either leave this entry blank or re-enter the first number. Press the RETURN/ENTER key to proceed.

If access mode 2 (the dial-back option) was chosen above, the display will now show **ENTER DIAL-BACK NUM** followed in a moment by a blank screen. Enter a telephone number that the panel can call to allow linking to the PANELMAN program. Press the RETURN/ENTER key to proceed.

The display will now show **TRANSMIT NAME YES** or **TRANSMIT NAME   NO**. Press the YES key to select yes, the NO key to select no, or the RETURN/ENTER key to maintain the current setting. If no is selected, the display may show **DATA BITS =7 ?** or **DATA BITS =8 ?** (proceed to the next paragraph). If the panel is in dial mode 1 and yes is selected, the name and address of the installation will be transmitted to a remote printer every time that data is sent. This allows any EUROPLEX 3000 series control panel to access a common remote printer by ensuring that the data from each panel can be uniquely identified on the printout. When yes is selected, the display will show **ENTER NAME/ADDRESS** for a moment and then the current name and address, if any. This can be entered or edited as required. Press the RETURN/ENTER key to proceed.

The display may now show **DATA BITS =7 ?** or **DATA BITS =8 ?**. When the panel is sending or receiving data, it will transmit or listen for a 7-bit or 8-bit data word. In some applications, the word length must be changed. If the panel is in dial mode 1, the word length of the remote printer may be already set as seven bits long. When the panel is in dial mode 3, the word length *must* be eight bits long for either remote or local use with PANELMAN software and for remote communication with the Model 1430 auto-answer modem/polling multiplexer interface. Press the RETURN/ ENTER key to accept the value shown or press the NO key to change to the other value. If the NO key is pressed to select an 8-bit word, the display will show **PARITY =EVEN**. As above, if the dial mode is 3, *no parity* is required for remote use with PANELMAN software or with the Model 1430 modem/multiplexer interface. Press the YES key to accept even parity or press the NO key to select no parity. If the NO key is pressed, the display will show **PARITY =NONE** for a moment (if the NO key was pressed previously to change an 8-bit word

NOTES CONCERNING THE MODEL 1431/32 AUTO-DIAL MODEMS cont.

to a 7-bit word, the parity is automatically set to even).

The display may now show **BAUD RATE =150   ?**. This is the default communication speed. Press the NO key until the display shows **BAUD RATE =1200   ?**. Press the RETURN/ ENTER key to accept this value. The panel will now return to date and time.

OPERATING INFORMATION

DIALLING OUT: Whenever any activity occurs on the control panel that results in the logging of an event, the panel will immediately send the logged data to the central/monitoring station. The Model 1431/1432 auto-dial modem contains a number of status LEDs. When the dial command string is sent from the EUROPLEX control panel to the Model 1431/1432 auto-dial modem, the red receive data (RX) LED and the yellow transmit data (TX) LED will flicker indicating receipt of the dial string. In a few moments, the line seizure relay will click and the green off-hook (OH) LED will light to indicate that the modem is off-hook and waiting for a dial tone. (If you have selected pulse dialling (.... DP), you will hear the dial pulse pattern.) When the call is established, a handshake tone will be sent from the Model 1430 auto-answer modem indicated by the green data carrier detect (DCD) LED coming on. The auto-dial modem TX and RX LEDs will flicker as long as data is being transmitted. The Model 1430 auto-answer modem will issue a hang-up command and the DCD and OH LEDs will extinguish, indicating that the call is complete.

LINE FAULT DETECTION: Both Model 1431 and Model 1432 auto-dial modems are equipped with line fault detection. The line fault detection circuit determines if the voltage available on the telephone line is less than 4 volts DC. Normally the voltage will be 48 to 52 volts DC when the telephone set is on-hook and approximately 6 to 9 volts DC when the telephone is in use. The Model 1431 auto-dial modem has only one-line capability and is suitable for residential installations. The Model 1432 has two-line capability and is suitable for commercial/industrial burglary and fire alarm monitoring installations. When the primary line fails, the secondary line is connected to the auto-dial modem input. Both primary and secondary telephone lines have line seizure relays to disconnect the "house" phone and/or to disconnect a caller using the "house" phone. The line fault circuit controls an SPST relay and provides a set of dry contacts (open on fault) which can be connected to a LEM (APLEX/MIDIPLEX) or control panel (MIDIPLEX/ DIRECTPLEX) zone input. A zone type, TELFLT, should be assigned to the appropriate zone number to log line fault activity. In addition, there is one red LED, LF1, on the Model 1431 autodial modem and two red LEDs, LF1 and LF2, on the Model 1432. When a line fault condition occurs, the appropriate line fault (LF) LED will light. Note that the line fault detection occurs on a timed basis and momentary interruptions of the telephone line do not result in an immediate change of the line fault LED status.

NOTES CONCERNING THE MODEL 1431/32 AUTO-DIAL MODEMS cont.

CALLING IN TO THE CONTROL PANEL: Any time the Model 1431/1432 auto-dial modem is powered up, there will be a momentary flicker of the LEDs and then the modem will assume an idle condition. If there is no line fault problem, then all LEDs will be off. However, the green auto-answer enabled (AAE) LED must be on to allow the control panel to answer a call from the PANELMAN software. This occurs when the command S0=8 is detected in the dial command originated by the control panel or by ensuring that J1 and/or J2 are shorted. If no jumpers are present, you must log an event which forces the dial command string to be transmitted into the auto-dial modem. An easy way to do this is to select SERVICE MODE mode (Service user code + shift YES) and then to press NO to quit. The panel will load the modem with the dial command and the AAE led will light.

NOTES CONCERNING DVACS^(tm) TECHNOLOGY

DVACS^(tm) - DIGITAL/VOICE ACCESS and CONTROL SYSTEM

Where the service is provided, the APLEX control panel may be connected to a Schedule 3A Data Channel equipped with the DVACS^(tm) option for on-line central/monitoring station service with companies using the EUROPLEX Model 4100/4300 polling multiplexer. The following connections must be established between the panel and the F1F2 subset:

        APLEX   F1F2 SUBSET

    -ve(Gnd) <--------------------> Gnd (Yellow of six cond.)
    Tx ----------------------------> Rx (White of six cond.)
    Rx <---------------------------- Tx (Orange/Blue of six cond.)

Select the serial-data set-up using the procedure on page 53.

The following data configuration is required for DVACS^(tm):

COMMS MODE	**0**	
SYSTEM ID	**#**	where # is the polling address, 1 to 127.
ACCESS CONTROL	**#**	where # can have values 0 to 543.
LOG FILTER	**#**	where # can have values 0 to 8191.
DIAL MODE	**0**	
DATA BITS =	**8**	
BAUD RATE =	**150**	

You must obtain the polling address from your alarm company and only they can set your customer on line. Note: When the alarm company gives you an address, it **must be a three-digit number** (e.g., C4046 only uses the **last three digits,** 046, as the SYSTEM ID; 875022 only uses the **last three digits,** 022, as the SYSTEM ID). After you have completed the data configuration, call up the central/monitoring station personnel and ask them to set your customer on line.

A service diagnostic is available for use with the DVACS^(tm) installation. Press the HELP key twice within three seconds. Do not enter your user code! The display will show **POLL TIME =** #. The # value indicates the time **between** polls. If this value is 0, then no polling is occurring. Either the customer address is not on line, the wiring connection from the F1F2 subset to your panel is incorrect, or the link between the customer's F1F2 subset and the central/ monitoring station is out of service. Typical times will be 150 minus the time between polls (i.e., on a ten-customer circuit, the poll time would show **140**). This represents the difference in time between 150 seconds and the time a poll command was received (i.e., 10 seconds). To turn this diagnostic off, press the HELP key twice again or the poll time message will automatically disappear after a period of time equal to the bell cut-off time [i.e., if the bell cut-off time is 15

NOTES CONCERNING DVACS^(tm) TECHNOLOGY cont.

minutes (900 seconds), then the message will disappear 15 minutes after it is first turned on]. Press the HELP key twice again and the process will repeat itself. Note: This diagnostic only indicates *receipt of the correct polling address* from the station. If there is a wiring problem from the transmit line of the panel TX to the F1F2 subset, or a defective EIA (RS-232) portion of the F1F2 subset, then the panel will still indicate an off-line condition in the central/monitoring station.

If the APLEX control panel will not go on line, perform the following extremely effective test: At the subset, unplug the cord labelled F1F2. The loop and carrier leds should extinguish. Check for the following voltages **as measured on the APLEX control panel's Comms/J terminal strip**:

<table>
<tr><td>F1F2 List 1 Subset</td><td>F1F2 List 3 Subset</td></tr>
<tr><td>37 (-ve) to 39 (Tx) -0.5 VDC</td><td>37 (-ve) to 39 (Tx) 0 VDC</td></tr>
<tr><td>37 (-ve) to 40 (Rx) +10 VDC</td><td>37 (-ve) to 40 (Rx) -9 VDC(steady)</td></tr>
</table>

Plug the cord back into the subset jack labelled F1F2. Remeasure the APLEX control panel's Comms/ J terminal strip:

<table>
<tr><td>F1F2 List 1 Subset</td><td>F1F2 List 3 Subset</td></tr>
<tr><td>37 (-ve) to 39 (Tx) -0.5 VDC</td><td>37 (-ve) to 39 (Tx) 0 VDC</td></tr>
<tr><td>37 (-ve) to 40 (Rx) -5 VDC (pulsing +ve)</td><td>37 (-ve) to 40 (Rx) -9 VDC (pulsing +ve)</td></tr>
</table>

These measurements indicate that the F1F2 subset is functioning properly. Reconfirm with the telephone company that the hub card leg is turned up (in service) and then request the alarm company to set your control panel on line again.

PRINTING AND DVACS(tm)

In this manual, reference has been made to the printing of the system log, on-line reports, etc. Printing these items is not possible when the panel is set up for DVACS(tm) because the serial port has been used with the DVACS(tm) data channel. To print a log, report, etc., lever up the Comms/J terminal strip from the panel and remove it from the header pins. Prepare a printer cable, complete with its own terminal strip, and press this terminal strip onto the panel header pins (see page 54). This procedure will avoid the problem of incorrect re-installation of the DVACS(tm) F1F2 subset. If you choose not to use a printer cable equipped with its own terminal strip, then remove the signal negative (-ve) and TX and make the connections to the printer. Do not leave the DVACS(tm) signal negative parallelled with the printer signal negative as this will damage the F1F2 List 1subset. This is not a problem with the F1F2 List 3 subset.

NOTES CONCERNING DVACS(tm) TECHNOLOGY cont.

If your customer has been using a local printer and has lost the use of it because of DVACS[(tm)] operation, then you may install a Model 3302R3 port splitter. This device splits the panel serial-communications port into two separate ports. One port on the Model 3302R3 is then reconnected to the F1F2 subset and the other port would be connected to the local serial-input printer. Real-time events from the panel and the printing of reports will now be logged on the printer.

The following section has been added to explain the library messages which are sent to the Central/Monitoring station automation software. If the station operator notifies you that a certain 'strange code' has been received, look it up in this section for an explanation.

LIBRARY MESSAGES

The following table lists the zones and messages for 3GS, Aplex, Midiplex, Directplex, and Transponders.

HEX CODE	DECIMAL CODE	LIBRARY MESSAGE	CONTEXT U=User Selection, S=Status Alert, - = Not Transmitted
21	33	MODE 6	U
22	34	MODE 7	U
23	35	MODE 8	U
24	36	MODE 9	U
25	37	AREA SETUP	U
26	38	CARD INFO	U
27	39	FORCE CALL	U
28	40	SET UP DM 1200	U
29	41	NODE CONFIGURE	U
2A	42	OUTPUT TEST	U
2B	43	CLEAR SOAKS	U
2C	44	SOAK MODE	U
2D	45	COMMAND MODE	U
2E	46	FAULT ON EXIT	S
2F	47	SETUP CARDS	U
30	48	PAGER TEST	U
31	49	NODE/CABINET TAMPER	S
32	50	NODE LOST	S
33	51	NODE PORT 1 OFFLINE	S
34	52	NODE PORT 2 OFFLINE	S
35	53	NODE RESET	S
36	54	MEMORY ERROR	S
37	55	POWER/FUSE FAIL	S
38	56	DUPLICATE SERIAL #	U
39	57	NETWORK RECONFIGURED	U
3A	58	DATA CHANGED	U
3B	59	CABLE FAULT	S
3C	60	HOLIDAY	S
3D	61	ACCESS MSG	S

HEX CODE	DECIMAL CODE	LIBRARY MESSAGE	CONTEXT U=User Selection, S=Status Alert, - = Not Transmitted
3E	62	DOOR FORCED	U
3F	63	ACCESS SETUP	U
40	64	DOOR HELD	U
41	65	PIN CODE ALERT	U
42	66	ANTI-PASS BACK	U
43	67	ACCESS DENIED	U
44	68	DOOR/CARD NOT ASSIGNED	U
45	69	INVALID PIN/TIME ZONE	U
64	100	ACCOUNT OFFLINE/ONLINE	S
9C	156	DISARMED	U
9D	157	PART ARMED 1/AUDIBLE SIL 1	U
9E	158	PART ARMED 2/AUDIBLE SIL 2	U
9F	159	FULLY ARMED	U
A0	160	DOOR ACCESS/BELL TEST	U
A1	161	NEW CLOSING TIME	U
A2	162	ACKNOWLEDGE/CLEAR DISPLAY	U
A3	163	SYSTEM LOG	U
A4	164	SHUNT MODE	U
A5	165	SET DATE/TIME	U
A6	166	USER SET OWN ID	U
A7	167	ASSIGN ZONES/VARS.	U
A8	168	SET IDS/OPTIONS	U
A9	169	SERVICE MODE	U
AA	170	DISABLE MODE	U
AB	171	LITERAL EDIT	U
AC	172	*IMPROPER CLOSING*	S
AD	173	*EARLY OPENING*	S
AE	174	SHUNTED ZONES=	-
AF	175	COLD START	S
B0	176	WARM START	S
B1	177	HOT START	S
B2	178	AUTO START	S
B3	179	P.CODE START	S
B4	180	SOFT START	S
B5	181	* MONITOR ALARM *	S
B6	182	DATE ROLLOVER	-
B7	183	*CABINET TAMPER*	S
B8	184	*REMOTE HEAD TAMPER*	S
B9	185	DO NOT USE	S
BA	186	BACK TAMPER	S
BB	187	AC POWER FAIL	S
BC	188	LMTC DATA PROBLEM	S
BD	189	LMTC CONTROL PROBLEM	S
BE	190	LOOKUP MSG 1/O/P 3 OVERLOAD	S
BF	191	LOOKUP MSG 2/O/P 4 OVERLOAD	S
C0	192	*FUSE 2 BLOWN*	S
C1	193	*BATTERY PROBLEM*	S

LIBRARY MESSAGES cont.

HEX CODE	DECIMAL CODE	LIBRARY MESSAGE	CONTEXT U=User Selection, S=Status Alert, - = Not Transmitted
C2	194	COMMS TEST	S
C3	195	*TELCO LINE FAULT*	S
C4	196	CANNOT ARM	S
C5	197	SET TIME COMMANDS	U
C6	198	INPUT OVERFLOW	S
C7	199	HOUR CHNGE ON SUNDAY	U
C8	200	*ID SECURITY ALERT*	S
C9	201	CLEAR DISABLES	U
CA	202	WALKTEST	U
CB	203	CODE ENTRY TIME-OUT	S
CC	204	PRE-PROGRAMMD SHUNT	U
--		ZONE TYPES (not txd.)	-
DE	222	OUT OF SERVICE	U
E7	231	TIME ADVANCE	U
E8	232	*ZONE TAMPER ALARM*	S
E9	233	** PANIC ALARM**	S
EA	234	**INTRUDER ALARM**	S
EB	235	** FIRE TROUBLE **	S
EC	236	**FIRE ALARM**	S
ED	237	++ CALL SERVICE ++	S
EE	238	**DURESS ALARM**	S
EF	239	*FIRE DOOR OPENED*	S
F0	240	*SLOW ENTRY ALARM*	S
F1	241	*CALL NOT ANSWERED*	-
F2	242	-----	
F3	243	CLOSING TIME SOON	S
F4	244	PAST CLOSING TIME!	S
F5	245	POLL TIME =	-
F6	246	DOOR CHIME ON	-
F7	247	*SPRINKLER TROUBLE*	S
F8	248	*SPRINKLER SUPERVY*	S
F9	249	SET DATA FORMAT	U
FA	250	ACCESS CONTROL	U
FB	251	SYNTAX ERROR	S
FC	252	CANCEL HOUR CHANGE	U
FD	253	STACK ERROR	S
FE	254	LOG DATA LOSS!	S
FF	255	LIT DATA LOSS!	S

INDEX