

BRASCH

UNIVERSAL CONTROL PANEL (MULTI-POINT SYSTEM)

Model Nos.: **GDCP-0**
 GDCP-1
 GDCP-2
 GDCP-3

Instruction Manual

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OPERATION SAFETY NOTICE

Certain procedures and operations detailed in this manual require that specific precautions be taken prior to beginning the procedure or operation. When precautions are required, a notice will be printed in an appropriate location in the manual. The user is urged to read and understand all such notices.

Types of Notices

Three types of notices are used in this manual to describe the severity of the situation encountered.

WARNING This notice indicates that conditions exist that could cause personal injury or loss of life.

CAUTION Conditions exist that could cause damage to the equipment or other property.

Note Special consideration should be given to the procedure or operation or an unexpected operational result could occur.

Limited Warranty

Brasch Manufacturing Co., Inc. warrants gas transmitters, gas detectors, gas detector control panels and accessories for a period of one year from the date of shipment against defects in material and workmanship. Should any evidence of defects in material or workmanship occur during the warranty period, Brasch Manufacturing Co., Inc will repair or replace the faulty product at its own discretion, without charge. The company shall not be held responsible for any charges in connection with removal or replacement of allegedly defective equipment, nor for incidental or consequential damages.

Section 1

Introduction and Specifications

1-1 Introduction

- 1-2 Your Brasch Universal Control Panel and associated transmitters comprise a complete monitoring system for detection of dangerous concentrations of specific toxic gasses. The system is capable of monitoring remote locations for gasses such as carbon monoxide, nitrogen dioxide and various refrigerants and controlling alarms and ventilation fans to provide both a warning and reduce the ambient concentration of the contaminant.

Various types of gas sensors are available allowing control of very large areas with one centrally located panel. The standard system, GDCP-0, can receive signals from as many as 8 transmitters and control up to 4 ventilation systems. With the addition of optional printed circuit boards, a total of 20 transmitters and 10 ventilation systems can be accommodated. All data into and out of the transmitters and ventilation systems are entered and read at the control panel.

1-3 Model Descriptions

- 1-4 The Universal Control Panel is available in four models to meet the user's requirements. The different model designations reflect the maximum number of transmitters and ventilation systems the panel can control.

Model GDCP-0

This standard configuration is capable of monitoring up to 8 transmitters and controlling up to 4 ventilation systems.

Model GDCP-1

This model extends the standard panel's capacity to a total of 12 transmitters and 6 ventilation systems.

Model GDCP-2

The maximum number of transmitters is increased to 16 and up to 8 ventilation systems can be controlled.

Model GDCP-3

This model extends the panel to its full capacity of 20 transmitters and 10 ventilation systems.

Models GDCP-0, GDCP-1 and GDCP-2 can be upgraded to a larger capacity simply by installing an optional board, P/N GPSLAVE.

1-5 Optional Channel Extension Board

- 1-6 An optional channel extension board, P/N GPSLAVE, is available that extends the control panel's capacity by 4 transmitters and 2 ventilation systems. The panel can accommodate up to 3 optional boards.

Refer to section 2-76 for instructions on installing this optional board.

1-7 Specifications

- 1-8 Specifications for the Universal Control Panel are given in table 1-8.1

Note

All specifications current at the time the unit shipped. Brasch Manufacturing Company, Inc reserves the right to make any changes to future production units when such changes are deemed necessary. There is no implied responsibility to make these changes available to current users.

Table 1-8.1 Universal Control Panel specifications

Electrical	
Power requirements	
Voltage	120 VAC, +/- 10 %
Frequency	50/60 Hz.
Inductive power	120VA
Installation Category	II (local level, over-voltage transients below 1500 volts.)
Environmental	
Temperature	
Operating	-15° C to 40° C (5° F to 104° F)
Storage	-50° C to 120° C (-58° F to 248° F)
Humidity	
Operating	10 to 90 % (non-condensing)
Storage	10 to 90 % (non-condensing)
General	
Size	16¼ in. H x 11¾ in. W x 5¼ in. D 41.3 cm H x 29.8 cm W x 13.3 cm D
Weight	14 lb. 6.4 Kg.
Housing	Heavy gauge painted steel, NEMA 1 classification
Recognition	
Agency	ETL listed
System, electrical	
Display	20 char. x 4 line LCD with LED backlight
Keypad	4 x 4 matrix with tactile feedback switches
Timing	Real-time clock with output for minutes, hours, days, day-of-week, month and year
Circuit	Microprocessor controlled with battery backup

Input channels		
Number		8 (std.), 20 (max.)
Input signal		4 to 20 mA
Input resistance		50 Ohms
Maximum external resistance		250 Ohms
Output channel		
Number		4 (std.), 10 (max.)
Type of output		Mechanical relay contacts, fused at 5 Amps
Maximum voltage rating		125 VAC, 50/60 Hz
Current capacity		5 Amps resistive
Power (inductive)		250 VA (1/8 HP)
Alarms		
Type		1 external output, one internal transducer
External		
Type of output		Mechanical relay contacts, fused at 5 Amps
Maximum voltage rating		125 VAC, 50/60 Hz
Current capacity		5 Amps resistive
Power (inductive)		250 VA (1/8 HP)
Internal		
Type of output		Piezoelectric ceramic element
Frequency		3.7 KHz
Sound level		105 dB @ 10 cm

Section 2 Operation

2-1 Introduction

2-2 This section of the manual provides instruction on operating your Universal Control Panel. Along with information on unpacking and setup, you will find detailed explanations on initial operation, initial programming and checkout, and techniques on programming to obtain the most efficient use of your system.

2-3 Initial setup

2-4 Unpacking and Inspection

2-5 Depending upon the model of control panel ordered, you may receive the shipment in more than one container. In any case, carefully unpack all containers and check all contents against your purchase order. Inspect all packing material to be sure that no components in the shipment are overlooked. Report any missing components to your Brasch representative or to the Brasch factory as soon as possible. You may want to save the packing cartons in case there is a reason to return any of the components to the factory at a later date.

WARNING

This system requires the connection of voltages with high enough potentials to cause fatal injuries. Proper procedures must be followed anytime work is performed on the unit.

ONLY QUALIFIED PERSONNEL SHOULD ATTEMPT TO MAINTAIN OR SERVICE THIS EQUIPMENT!

2-6 AC Line Voltage Requirements

2-7 The control panel is designed to operate from 120 VAC, 50/60 Hz power at 120 VA. The user must supply the correct wiring to the control panel. This wiring must include a disconnect device or switch located within easy reach of the control panel and marked as the disconnect device for the panel. The proper connection of the AC power is discussed in paragraph 2.10 of this section.

2-8 System Mounting Requirements

2-9 Mount this unit only indoors in a dry location. Ensure that the user has easy access to the front panel controls and that the display can be easily read. A location close to where the users spend a good deal of their workday is ideal. This location will allow for the periodic monitoring of the data gathered from the remote transmitters.

The unit is equipped with back mounted brackets to allow attaching the housing to a wall or other upright, solid supports. The mounting dimensions are given in Fig. 2-9.1. Make sure that, when mounted, the door can swing completely open to allow access to the interior of the housing. Various knockout holes are provided on the left side of the housing for wiring and conduit connections. Follow the proper electrical code when making these connections.

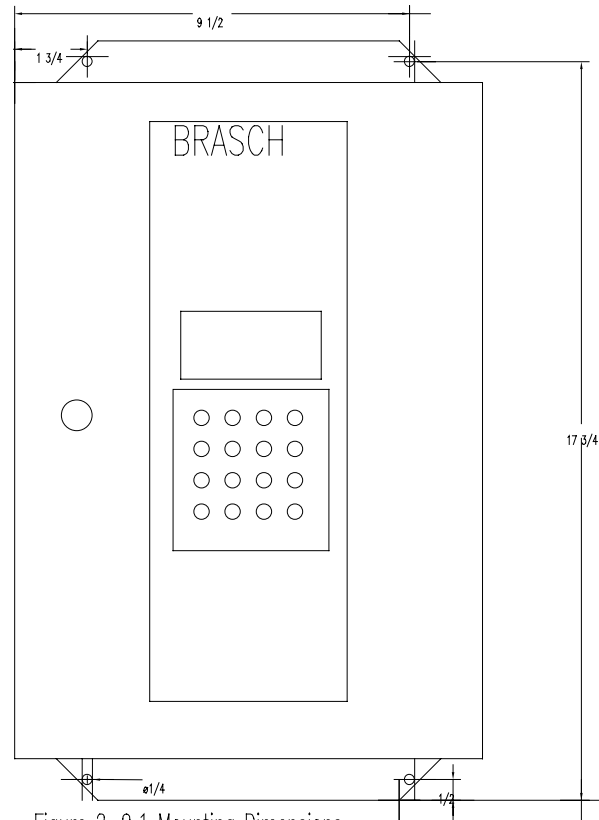


Figure 2-9.1 Mounting Dimensions

WARNING

Failure to follow the proper electrical wiring code could create a hazardous condition placing the user and others in danger.

2-10 AC Line Voltage Connections

2-11 The 120 VAC input connects to terminal block TB-1 positioned in the upper, left corner of the main PC board. See Fig. 2-11.1, Interior View, for more details. Connect the high side of the line, L1, to the top terminal, labeled “T1”. The neutral side of the line connects to the middle terminal, labeled “NEU”. Connect the ground to the bottom terminal, labeled “GND”. Use only 14 AWG stranded wires and terminate with the proper terminals. See the specifications section of this manual, section 1-9, for the ac power requirements.

CAUTION

To avoid damage to the panel, do not apply AC power until all input and output connections are made, and you understand the meaning of the initial display messages described in this section.

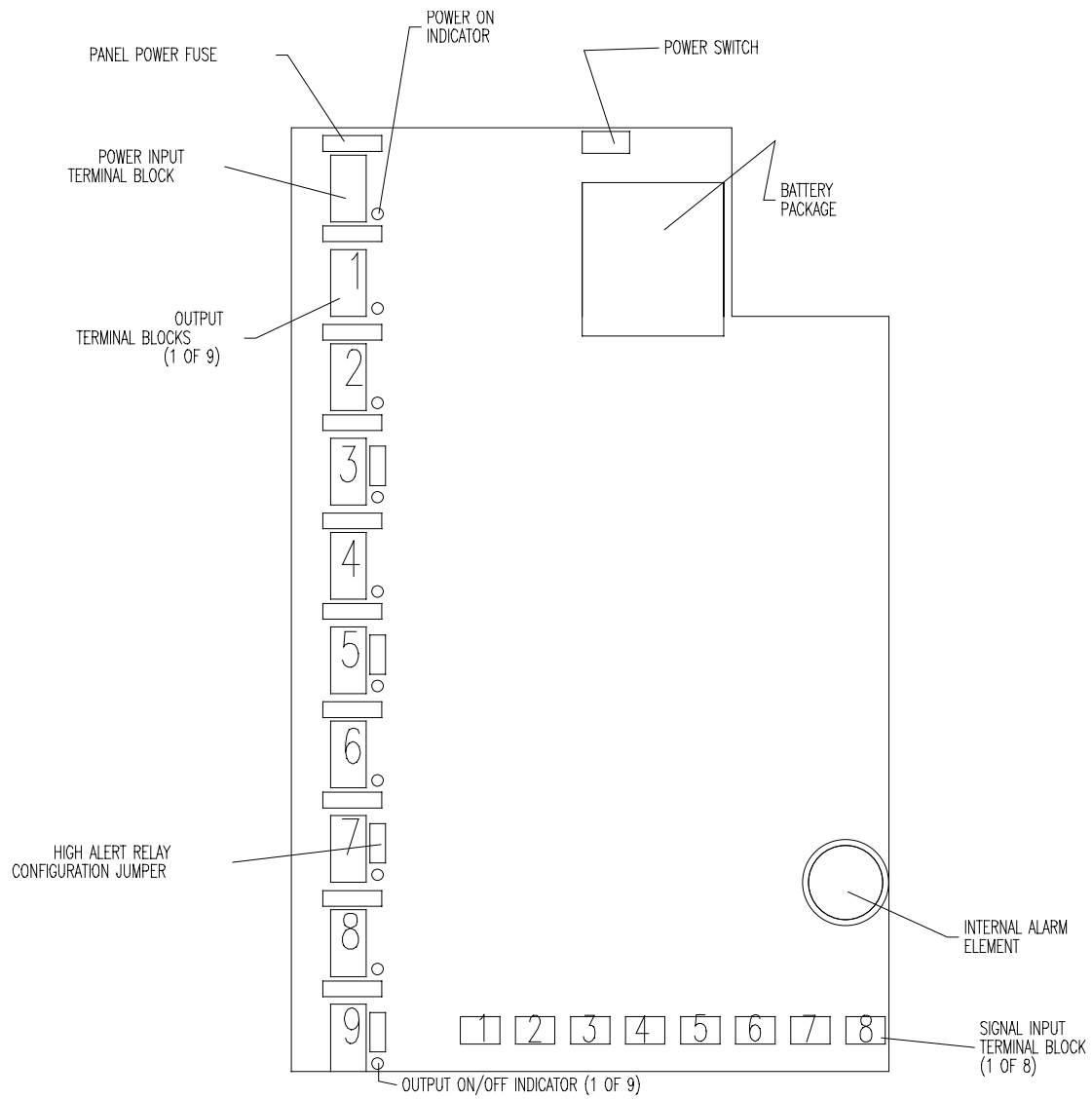


Figure 2-11.1 Interior View, Main Control Board

2-12 Signal Input Connections

- 2-13 This unit is designed to accept input signals from Brasch gas detectors, Models BGS-CM-TRNS, BGS-ND-TRNS, BGS-NCM-TRNS, BGS-REF-TRNS, BGS-CM-STD, BGS-ND-STD, BGS-NCM-STD, BGS-REF-STD and BGS-CD-STD. Use of other input devices could destroy the input section of the control electronics. Brasch Manufacturing Company, Inc. cannot accept responsibility for damage caused by the use of any other manufacturer's equipment.

CAUTION

The signal input connections are rated for a maximum of 10 Vdc between each input and ground. Connect only to Brasch manufactured gas detectors.

Depending upon the model of the control panel, up to 20 transmitters can be connected as inputs. All connections are made at the bottom edge of the printed circuit board to three position terminal blocks. See Fig. 2-11.1 for the location of these terminal blocks. To prevent the possibility of connecting improper voltage levels, these blocks are designed to accept no wire larger than 22 or smaller than 26 AWG. Each block is marked with its channel input number. This number corresponds to the sensor number that appears on the front panel display. Each block is also marked with "R1", "R2" and a triangle symbol indicating the input ground. The input positive wire must connect to R1 and the negative wire must connect to R2. Connect the input ground to the terminal marked with the ground symbol.

No special terminals are required to connect to the terminal blocks. Strip approximately 3/8 of an inch of insulation from the end of the input wires. To produce the best connection, tin the bare end of the wire with solder. Using a small tool, such as a flat blade screwdriver, lift up the white lever above the terminal to be connected. Making sure that there are no loose strands of wire, slip the lead into the opening in the side of the terminal block. While holding the wire in place, push the lever downward until it rests firmly into the recess in the top of the block. Gently pull outward on the wire to check for a firm connection.

Note

Excessive force can pull the wire lead out of the terminal. Leave sufficient wire inside the panel housing to allow for any strain that might be placed upon the wire along its travel path.

2-14 Signal Output Connections

- 2-15 Depending upon the model, up to 10 remote ventilation systems can be controlled from the panel. Each control output consists of two relays mounted on the printed circuit board. Each relay is connected to a three position terminal block. These blocks are mounted along the left hand edge of the circuit board, and are labeled with an output number. This number corresponds to the number that will appear on the front panel display. The three positions of each terminal block are marked with the numbers 1, 2 and the letters "GND". Each of the numbered terminals are also marked with the letter "L" or "H". The letter "L" is the symbol for the word "LOW", and refers to the low alert actuating signal for the output system. In most cases, this output system will be the ventilation equipment for the facility. The letter "H" is the symbol for

the word “HIGH”, and refers to the high alert actuating signal for the output system. The terminal marked “GND” refers to the grounding connection for the output system.

The output relays are limited in their voltage and current capabilities. See the specification section 1-7 of this manual for the maximum ratings.

CAUTION

Exceeding the maximum ratings of the relays will cause damage to the relay contacts. Damaged relays must be replaced by the Brasch factory. Make sure that the ratings of the relays and the requirements of the output system are observed prior to operation.

The size of the output wiring will depend upon the current electrical code and the requirements of the output system. However, 14 AWG stranded wire is recommended. Connect the wires, using the proper wire terminals, to the correct positions of the terminal blocks. Connect the position marked with the number “1” on the block to the wire considered the high potential lead. In some cases, such as when the wires terminate at another relay coil, there will be no high or low potential wires. In these instances, follow the accepted convention, or practice, when connecting the wire. Connect the low potential, or second wire, to the terminal marked with the number “2”. The remaining ground wire connects to the terminal marked “GND”.

Leave enough wire inside the housing to allow for any strain placed upon the wire along its travel path.

CAUTION

Prior to the initial startup, make sure that all steps described in paragraphs 2-3 to 2-15 have been completed. Also, check for any loose wires or connections. Make sure that the power switch is in the “RESET” position and that the 4 AA batteries are firmly in their holder.

2-16 Initial Startup and Display Messages

2-17 After you have completed steps 2-3 to 2-15, you are ready to apply ac power to the panel. If the door is not already open, open it at this time. Turn the ac power on at its source and then slide the power switch, in the top, center of the main printed circuit board, to the “RUN” position. Close the door but do not lock it at this time. The LCD display should be in the “SET DATE” mode, and you should see a flashing, black rectangle in the ten’s location of the month position. The system is now ready to accept programming data and commands. However, before beginning to program the system, a description of the various controls and indicators is in order.

2-18 Interior Switches and Indicators

2-19 Fig. 2-11.1 shows the locations of the interior switches and indicators. Please refer to this figure during the following discussion.

2-20 Power Switch

- 2-21 You are already familiar with the location and use of the power switch. This switch interrupts the 120 VAC and battery voltage when placed in the “RESET” position. This switch will also reset the main circuit board if the situation warrants. Since the “RESET” position interrupts the battery voltage to the circuit, any currently operating program will be lost. When the power switch is returned to the “RUN” position, the system must be re-programmed.
- 2-22 Power Input Terminal Block
- 2-23 The power input terminal block is located in the top, left corner of the main PC board. This block receives the wiring that supplies the 120 VAC to the panel. Refer to paragraphs 2-10 and 2-11 for a description of this component.
- 2-24 Panel Power Fuse
- 2-25 Located directly above the power input terminal block is the main power fuse for the panel. All power to the panel passes through this fuse. The fuse has 120 VAC on both its terminals. Should this fuse require replacement, turn off all the AC power to the panel at the power source and only replace the fuse with one of the same ratings. This fuse is a 5 mm x 20 mm metric size with a 250 VAC rating and a 1 Amp current capacity. The fuse has SLO-BLO (time-lag) characteristics.
- 2-26 Power On Indicator
- 2-27 Below the power fuse is a green LED that glows when the power switch is placed in the “RUN” position.
- 2-28 Battery Backup Package
- 2-29 The battery backup package is located at the top of the main panel board and just to the right of the transformer, TR1. The package contains four AA cells. Under normal circumstances, these batteries should be replaced at 2 year intervals. The orientation of the batteries is clearly marked on the inside bottom of the holder. Replace the batteries with fresh, alkaline cells for best performance. During a power loss, the circuit can operate in a stand-by condition up to approximately 8 hours.
- During normal operation, the system checks the condition of the battery package once a day at 12:00 am. If the package fails the test, a message is displayed indicating that the batteries must be replaced. Promptly replace the batteries to prevent a loss of the system’s program should a power failure occur.
- 2-30 Signal Input Terminal Blocks
- 2-31 Located at the bottom edge of the main panel, and at the bottom edge of the optional channel extension board, are the input terminal blocks. These blocks receive the input signal wires from the remote transmitters. Refer to sections 2-12 and 2-13 for a more complete description of these blocks.
- 2-32 Output Terminal Blocks
- 2-33 Located along the left edge of the main panel board, and along the left edge of the optional extension board, are the output terminal blocks. The terminal block directly below the power input terminal block is the remote alarm terminal block. This block is present only on the main panel board. The remaining blocks are the control output terminal blocks. Each output is fused with a 5 Amp, 250 Vac fuse with SLO-BLO (time-lag) characteristics. Refer to section 2-14 and 2-15 for a complete description of these blocks.
- 2-34 Output ON/OFF Indicators

2-35 Each control output channel includes an indicator that glows when the output is actuated. A glance at these red LEDs can provide the status of each of the output channels. The alarm channel also has an ON/OFF indicator.

2-36 High Alert Relay Contact Configuration Jumper

2-37 The high alert relay of each channel can be configured to operate either in the normally open or normally closed position. A movable jumper, located between the high alert relay and its output terminal block, determines the configuration. With the jumper shorting the upper two posts of the four-post header, the relay is configured as normally open and the contacts are open during normal operation. If a high alert condition occurs, the relay contacts close. By moving the jumper to the bottom two posts, the relay operates in the normally closed position when not receiving power. The relay is supplied with power during normal operation holding the contacts open. This configuration allows the high alert relay to operate as an extra alarm relay, and is only applicable to systems using certain types of transmitters. In most situations, the jumper is placed between the two upper header posts.

2-38 Internal Alarm Element

2-39 The internal alarm element is located at the bottom, right corner of the main panel board. This component will emit a 3.7 kHz, 105 dB signal whenever the alarm function is active. The transducer can be silenced by the “ALM OFF” key on the front panel keypad. Once silenced, the transducer will not actuate again while the current alarm condition is valid. However, it is active for future alarm conditions.

2-40 Front Panel Features

2-41 Display

2-42 The four line, 20 character LCD display has two modes of operation. When programming the system, the display presents choices in a menu format and also echoes the information supplied by the user from the keypad. Depending upon the programming choice, one of several messages is possible.

The second mode of operation provides current information of the system’s status. Whenever an event occurs, such as an alert or alarm condition, a message is written on the display. Using this message, the operator can determine the proper response to the situation. More information on this mode can be found in sections 2-61 through 2-75.

2-43 Keypad

2-44 Information is input into the control panel through a keypad. While there are 16 keys, only the numbered keys, “MENU”, “NEW”, “ENT.” and “ALM. OFF” are active. The user presses these active keys in response to information presented on the front panel display. A detailed explanation of the function of each key is found in Tables 2-46.1.

2-45 Initial Programming

2-46 All communication with the panel is accomplished through the keypad and LCD display. The user enters the data by pressing a key on the keypad and reads the response, or result, from the display.

The programming code for the panel uses “menu driven” software. This simply means that choices are presented in a “menu” or list. Selections are made by pressing the keypad number that appears to the left of your choice. A decision will usually bring up another menu requiring another selection. At some point in the process, a choice is made that places the system in a mode to receive data for storage in memory. This data is then used to define the various operational states of the system.

Program information for storage in memory is entered in the general fashion outlined below.

- a) Numbers are entered as two digit numbers:
 1 is entered as "01"
 12 is entered as "12"
- b) Decisions, such as "ON" or "OFF", "HI" or "LO" and selection of zones or sensors, are made using the "NEW" key to index or toggle to the required selection.
- c) Data is accepted for storage in memory by pressing the "ENT." key.

The control panel program include seven distinct functions. These are the DATE, TIME, OUTPUT ZONES, INPUT SENSORS, PASSWORD, AUTOMATIC VENTILATION and MANUAL VENTILATION functions. The programming steps for each function can best be described using flow charts. In some cases, two flow charts are necessary to completely describe a function as the initial programming steps are different from the steps required to change the program.

A flow diagram contains all the steps required to program each function. Each chart starts with the panel's display in the MAIN DISPLAY position. This display shows the current day-of-the-week, date, time and a brief message stating something about the status of the system. To leave this display and initiate a programming sequence, press the "MENU" key. Progress along the flow chart by entering the information asked for in the next circle. When all programming steps are completed, the system will again be in the MAIN DISPLAY position.

The numbers and words inside the flow chart circles refer to the keys of the panel's keypad. Table 2-46.1 describes the function of each key.

Table 2-46.1 Functional description of the keypad keys

KEY	FUNCTION
0 through 9	Numerical input for setting dates and time. Menu choice selection AM/PM selection, (0 and 1)
MENU	Displays the Choice Menu to allow initial selection. Returns display to MAIN DISPLAY message
NEW	Indexes through the ZONE, SENSOR and OVERRIDE menus. Toggles On/Off, exhaust type and LO/HI/OFF in various menus.
ENT.	Stores the current selection in memory
ALM. OFF	Silences the internal alarm once the alarm is active.

2-47 Setting the Date and Time

2-48 With an understanding of the relevant components of the system and the flow charts, you are now ready to begin the initial programming of the panel. The first step is to set the real-time clock. This clock controls

all the timing functions of the panel. The clock must be set for the correct date as well as the correct time. The programming sequence to accomplish this is shown in the flow chart of Fig. 2-48.1, Initial Date and Time Setting. Below is a detailed description of the programming sequence.

- a) The front panel display should be showing the “SET DATE” message, and the black, flashing rectangle should be in the ten’s position of the “MONTH” statement. If not, open the panel door and place the power switch in the “RESET” position for approximately 20 seconds. Place the switch back in the “RUN” position to reset the panel circuits and bring up the “SET DATE” message.
- b) Using the numerical keys, enter the current month.
- c) When the month is correct, press the “ENT” key.
- d) The black, flashing rectangle will move to the day’s position. You may now enter the correct day. Press the “ENT” key to accept the entry.
- e) The black, flashing rectangle will now move down to the year’s position. Enter the correct number for the year. Again, press the “ENT” key when the number is correct.
- f) The display message will now request that the day-of-the-week be set. Press the “NEW” key until the current day appears. Press “ENT” to accept it.
- g) The display will now change to request the current time. Enter the hour and the minutes as noted in the flow chart.
- h) Now select the “am” or “pm” period, followed by the “ENT” key.
- j) The display will now change to present the date and time as you have entered them, and there should be a flashing colon between the hour and minute indication. Also, two lines will be displayed below the “time” line. These lines may indicate that some events are happening. After one minute, the lines should change to indicate “PRESS MENU FOR FUNCTION CHOICE”.

After you have completed the initial programming described above, the system is ready to receive a program that is specific to your requirements.

