TABLE OF CONTENTS

SPECIFICATIONS:

Relay Outputs	Form A rated for 30VDC @ 2.0A resistive 125VAC @ 0.5A
	(The relay contacts are gold over silver-nickel plated)
Status Input Characteristics	+12V maximum open circuit voltage
	1 ma maximum closed circuit current
	Inputs protected for 20V with respect to circuit common
	4.3V minimum open circuit voltage 0.7V maximum closed circuit voltage
	status inputs are designed to monitor contact closures to circuit common
Status Input Impedance	12K ohms
DTMF Digit Validation Time	Single digit format: 300mSec. Multiple digit format: 45mSec.
DTMF Audio Level (at TP3)	-10dBm maximum -30dBm minimum
	with +/- 3 dB adjustment range
Output Audio Level	-0dBm maximum
	adjustable down to -20 dB
Transmitter Key Level Drive Capability	sink 30 ma.; 30VDC
Operational Range	0 C to +70 C minimum -30 C to +80 C typical
Power Requiement	117VAC 10%, 60Hz, 15W
Physical Dimensions	10 in. H x 8.5 in. W x 2.6 in. D
	25 cm H x 21 cm W x 7 cm D

SECTION 2

INSTALLATION INSTRUCTIONS

MOUNTING:

The remote control is intended for wall mount attachment.

The mounting holes should be located against a solid backing either at a stud or solid, wooden mounting surface.

BARRIER STRIP TERMINAL INTERCONNECTIONS:

All barrier strip terminal connections are intended to be dressed down the outside edges of the printed circuit card and exit through the cutouts at the bottom of the cover.

Output Relay Connections:

The remote control relays are arranged into groups of six relays. The Models 6003-6 and 6003-6D have only one group of six relays. The Model 6003-12 has two groups of six relays.

The first, or low group of relays resides on the main circuit board. The second, or high group of relays reside on an expansion circuit board which mounts to the top of the main circuit board.

The relays for the Models 6003-6 and 6003-6D will be referred to as the low group in this text as they coincide with the low group of relays in the Model 6003-12.

The expression "bank" will be used interchangeably with the expression "group" throughout the text of this manual when referring to the inputs and outputs of the remote control.

The connections for the low group of relays are made at TB3 on the left side of the main circuit board as identified in FIGURE 2-1.

FIGURE 2-2 illustrates the terminal assignments for TB3.

The connections for the high group of relays are made at TB5 on the left side of the expansion circuit board as identified in FIGURE 2-3.

FIGURE 2-2 also illustrates the terminal assignments for TB5.

Arc suppression circuitry should be used to optimize the relay contact life when these relays are used to operate solenoids, relays or other inductive loads.

FIGURE 2-4 describes the use of arc suppression techniques.

Status Input Connections:

The connections for the low group of inputs are located at TB2 on the right side of the main circuit board as identified in FIGURE 2-1.

FIGURE 2-5 illustrates the terminal assignments for TB2.

The connections for the high group of inputs are located at TB4 on the right side of the expansion circuit board as identified in FIGURE 2-3.

FIGURE 2-5 also illustrates the terminal assignments for TB4.

Each input provides a signal input terminal with an on-board pull up resistor and a signal return (to circuit common) terminal making the inputs ideal for use with a contact closure.

We recommend that input wiring which is prone to noise pickup (i.e. long wires) be shielded against these effects.

Shielded wire should be employed for these inputs and the shield wires should be terminated at one end only. When the chassis ground connection is not made at terminal 12 of TB1 then the input shields should be terminated at the distant end of the input cable.

FIGURE 2-6 illustrates these shielding techniques.

Connections For 2-Wire Audio Communications:

Board Jumper J17 must be installed for 2-wire audio communications.

Connect the audio communications line to TB1 terminals 3 and 4.

FIGURE 2-1 will aid you in locating J17 and TB1 terminals 3 and 4.

Connections For 4-Wire Audio Communications:

Board jumper J18 must be installed for 4-wire audio communications.

Connect the receiver audio to TB1 terminals 3 and 4.

Connect the transmit audio to TB1 terminals 8 (circuit common) and 9 (signal output).

FIGURE 2-1 will aid you in locating J18 and TB1 terminals 3,4,8, and 9.

Transmitter Key Output Connection:

TB1 terminal 6 can be used as a transmitter key control point. This output is capable of sinking 30ma., 30VDC and it is a logical low during transmit.

TB1 terminal 5 is a key line common for referencing associated equiupment to the Model 6003.

FIGURE 2-1 will aid you in locating TB1 terminals 5 and 6.

Monitor Audio Input Connection:

The monitor audio input connections are made to TB1 terminals 10 and 11 as identified in FIGURE 2-1.

Chassis Grounding:

Terminal 12 of TB1 must be connected to green wire ground in order to fully protect the 6003.

LOCAL AUDIO INPUT CONNECTION:

A self-powered DTMF generator (such as the Model CES 340J) can be connected locally at J2 for testing and local control. FIGURE 2-1 will assist you in locating J2.

This local audio jack will accept a miniature phone plug.

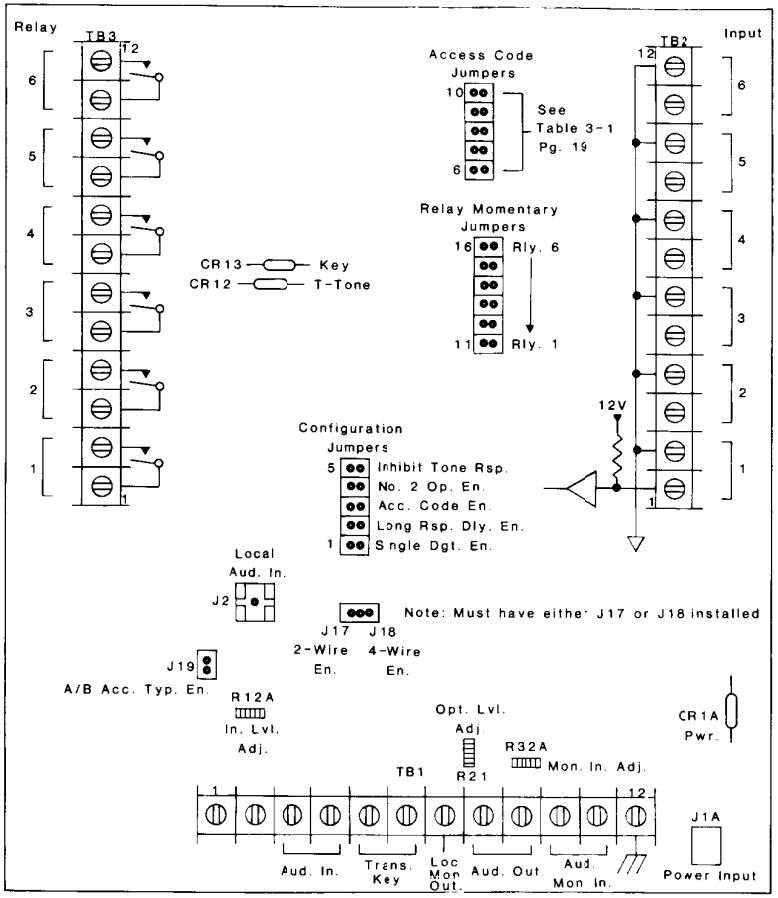
(AUDIO) ADJUSTMENTS:

(Audio) adjustments are discussed in SECTION 5: MAINTENANCE.

POWER CONNECTION:

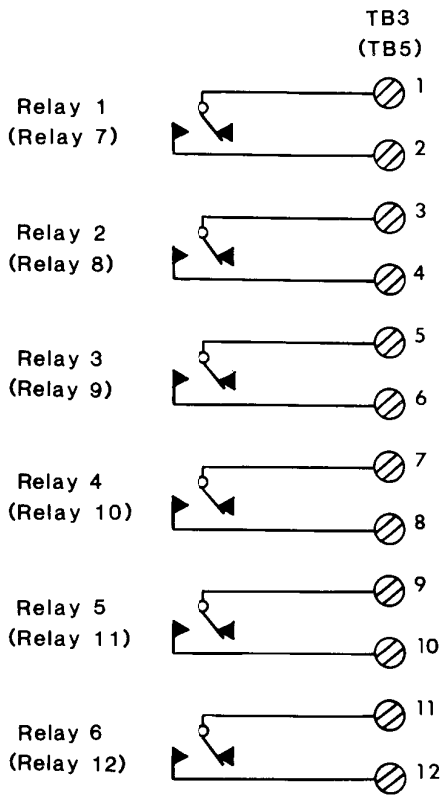
The remote control is provided with a UL/CSA approved transformer module which is used to interface the remote control to the AC power line.

Plug the transformer module into a standard duplex power receptacle and connect the plug at the other end of the transformer module's cord into the jack, J1A which is located on the main printed circuit board.



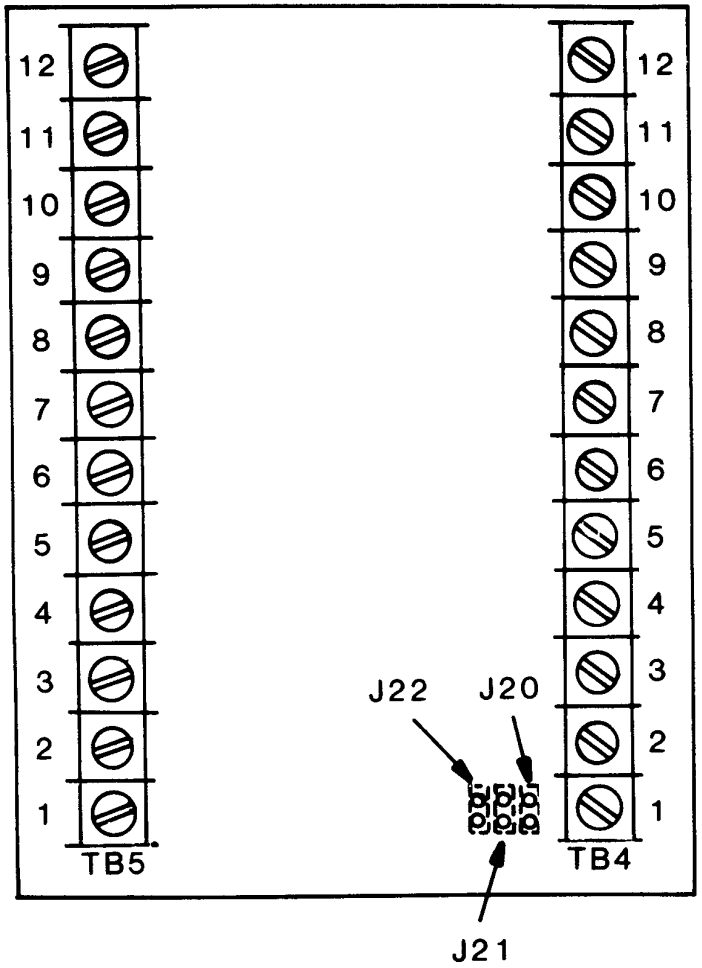
MODEL 3394 MAIN CIRCUIT BOARD ASSEMBLY

FIGURE 2-1



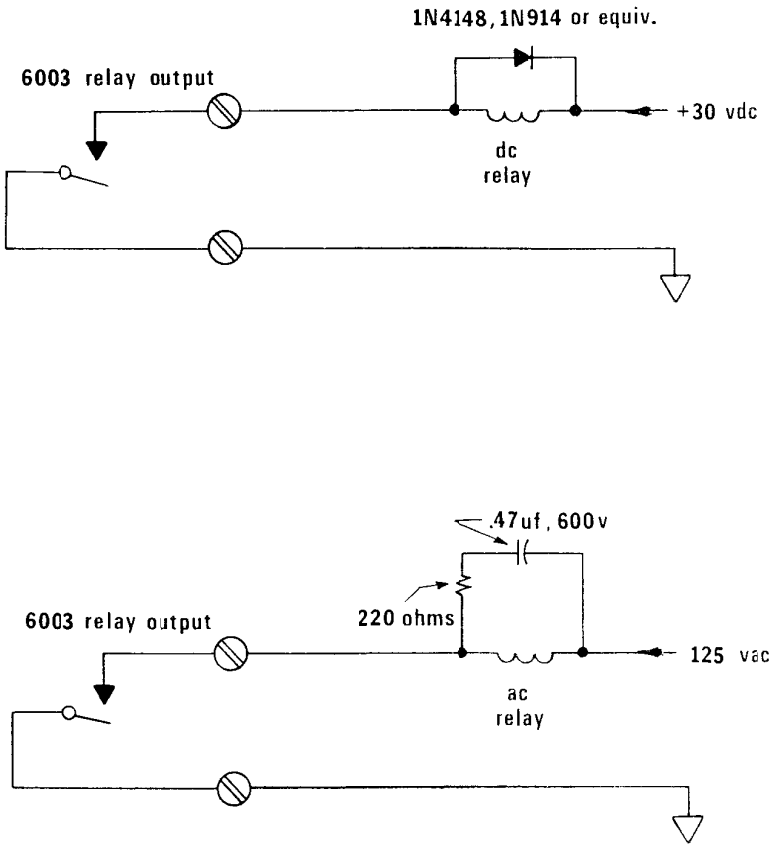
OUTPUT RELAY CONNECTIONS

FIGURE 2-2



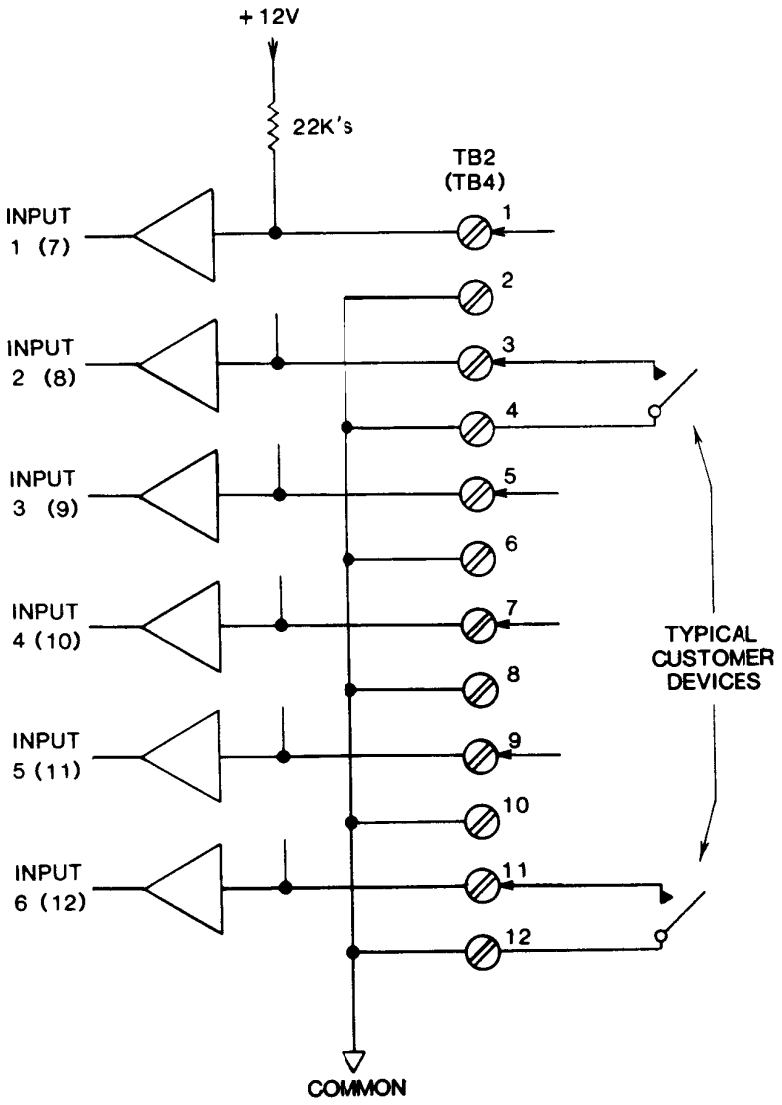
MODEL 3405 EXPANSION CIRCUIT BOARD ASSEMBLY

FIGURE 2-3



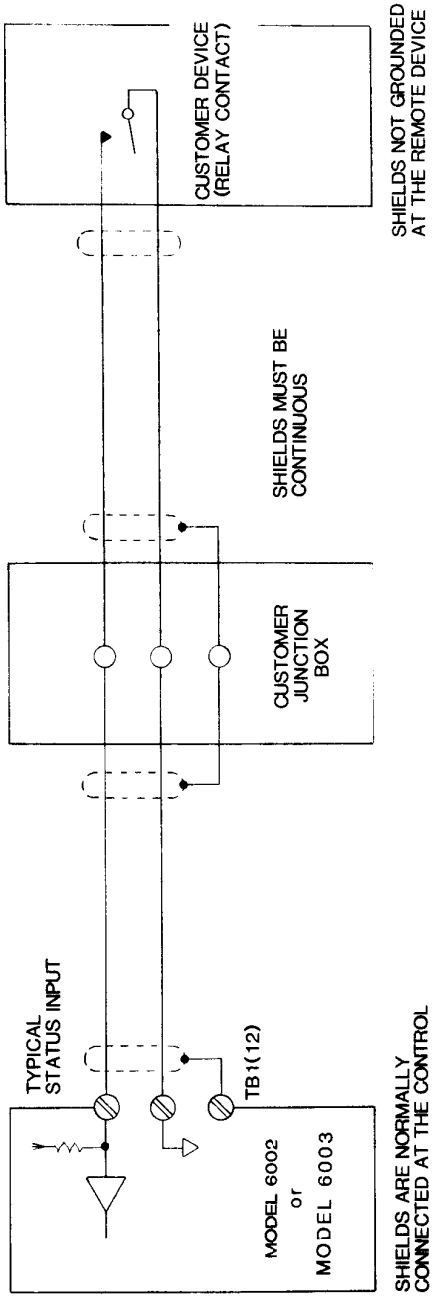
ARC SUPPRESSION TECHNIQUES

FIGURE 2-4



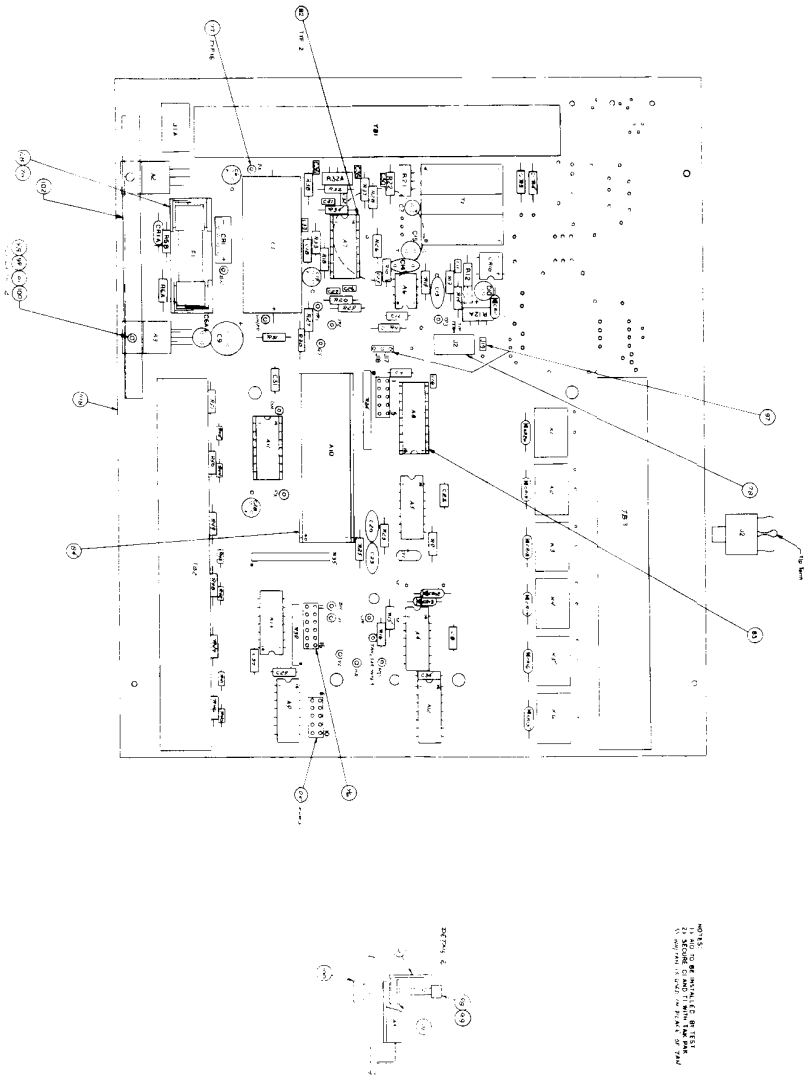
INPUT CONNECTIONS

FIGURE 2-5

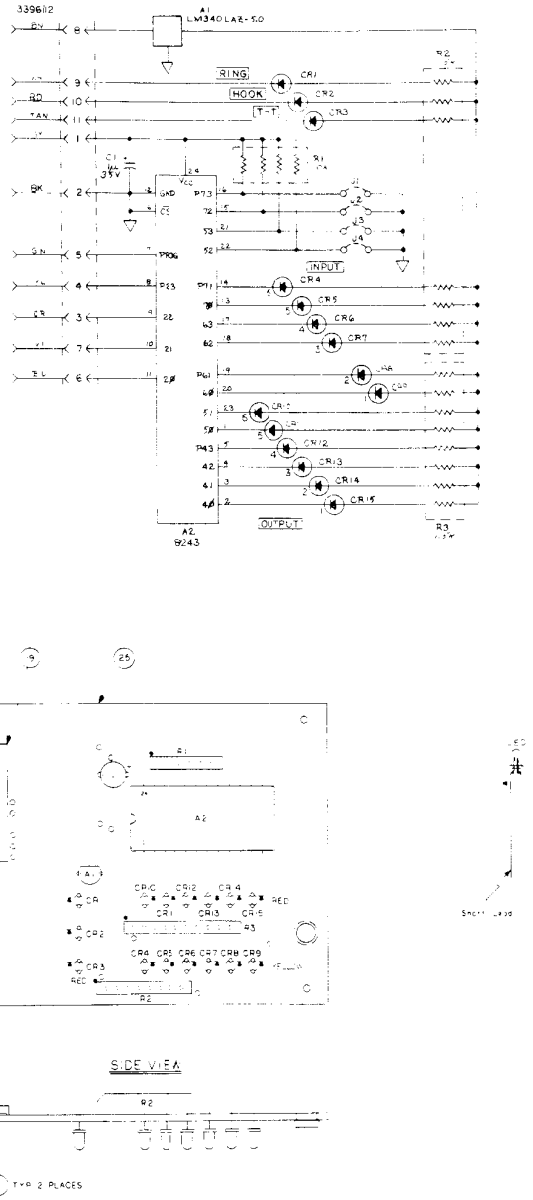


INPUT SHIELDING TECHNIQUES

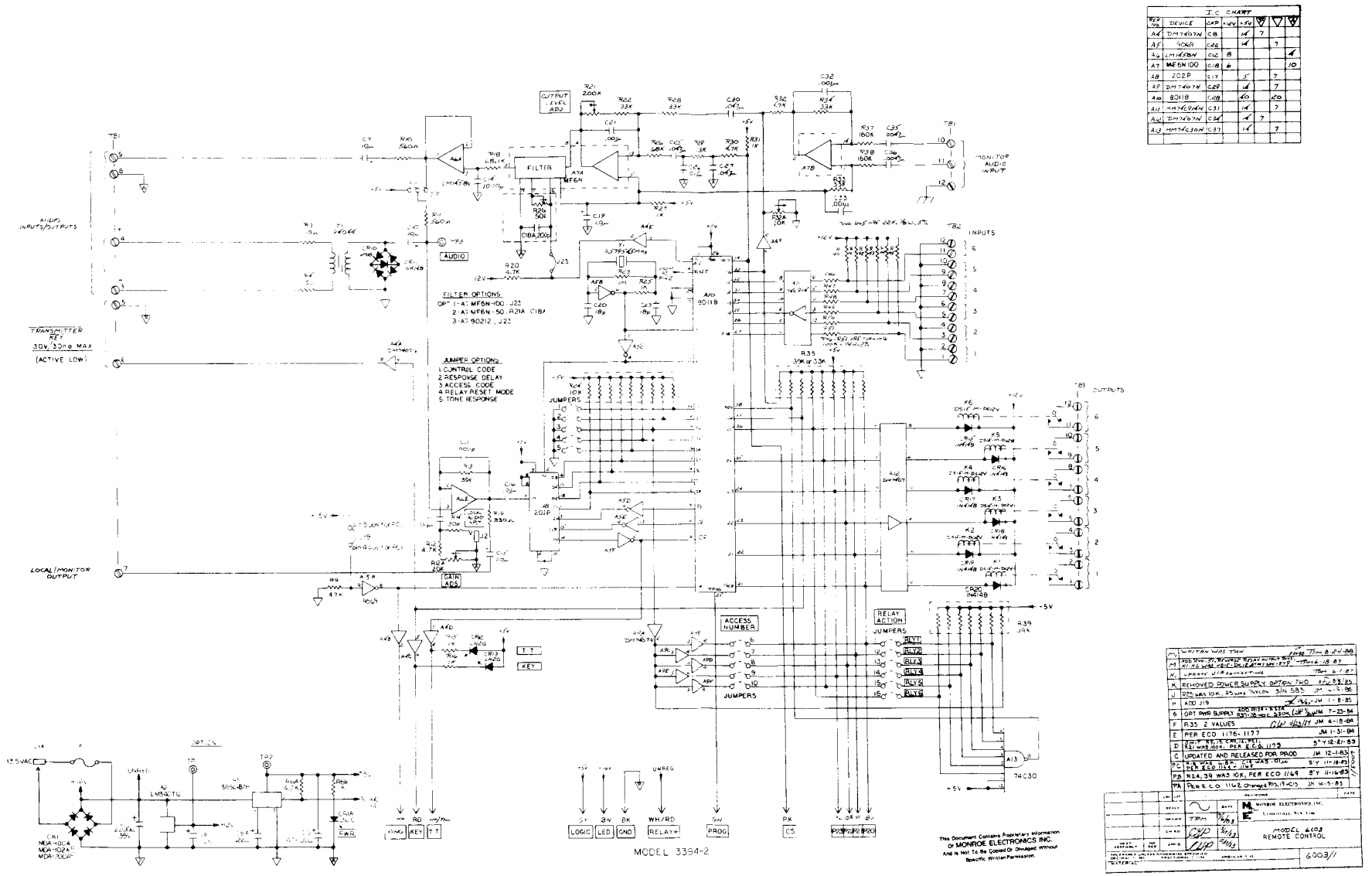
FIGURE 2-6



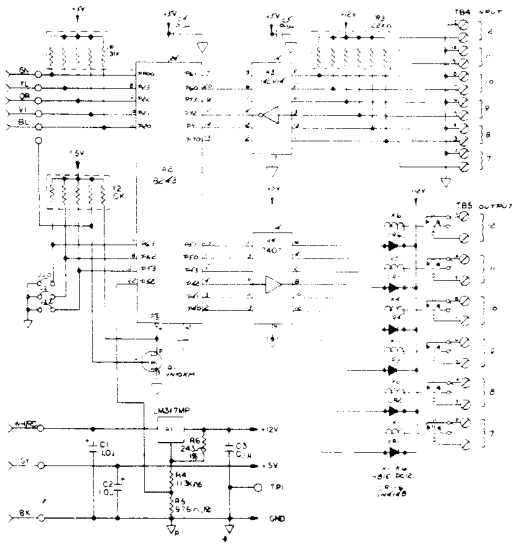
MCDEL 3394 BOARD ASSEMBLY



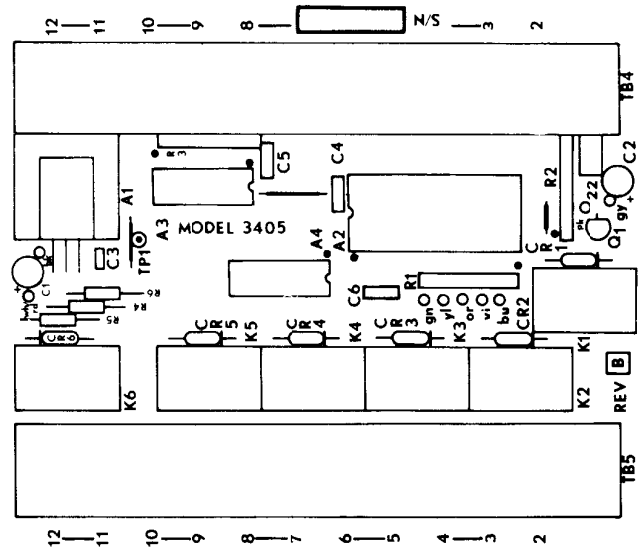
MODEL 3396 BOARD ASSEMBLY



MAIN SCHEMATIC DIAGRAM



Model 3405 Schematic



Model 3405 Board Assembly

SECTION 3

SELECTION OF USER OPTIONS

Plug-in programming jumpers permit the selection of user options. FIGURES 2-1 and 2-3 will assist you in locating these jumpers.

***** CAUTION *****

HOLD THE METAL BASE OF THE REMOTE CONTROL WHILE INSTALLING JUMPERS TO PREVENT DAMAGE DUE TO STATIC ELECTRICITY DISCHARGE.

JUMPER #1: CONTROL CODE FORMAT:

Jumper #1 programs the remote control to respond to a single or multiple digit control code format.

SPECIFICATION		JUMPER #1
REMOTE CONTROL CODE FORMAT	SINGLE DIGIT	INSTALLED
	MULTIPLE DIGIT	OPEN POSITION

You should familiarize yourself with the material in SECTION 4 where control code formats are discussed in order to determine the format most suitable to your application.

JUMPER #2: TONE RESPONSE DELAY:

Jumper #2 programs the (time) delay between the time when a control code is executed and the time when a tone response is returned to the operator.

SPECIFICATION		JUMPER #2
TONE RESPONSE DELAY	1 SECOND	INSTALLED
	.2 SECONDS	OPEN POSITION

JUMPER #3: ACCESS CODE:

An access code can be programmed using jumper #3 in conjunction with jumpers #6-#10. Also see jumper #19.

These jumpers permit a two digit access code, 01-32, to be

required before giving the operator access to the status and control functions of the remote control.

The access code must be a two digit code. The leading zero for access codes 01-09 must be entered.

If an access code is desired then jumper #3 is not installed and jumpers #6-#10 are installed as required to choose a specific two digit code 01-32. TABLE 3-1 describes the programming for jumpers #6-#10.

If no access code is desired then jumper #3 is installed and all jumpers #6-#10 MUST NOT BE installed.

NOTE: The remote control will not operate properly if these jumpers are not installed as described.

SPECIFICATION		JUMPER #3
ACCESS CODE	NOT REQUIRED	INSTALLED
	REQUIRED	OPEN POSITION

TABLE 3-1

ACCESS CODE PROGRAMMING

ACCESS CODE NUMBER	JUMPER NUMBER 6	7	8	9	10
01	X	X	X	X	X
02	-	X	X	X	X
03	X	-	X	X	X
04	-	-	X	X	X
05	X	X	-	X	X
06	-	X	-	X	X
07	X	-	-	X	X
08	-	-	-	X	X
09	X	X	X	-	X
10	-	X	X	-	X
11	X	-	X	-	X
12	-	-	X	-	X
13	X	X	-	-	X
14	-	X	-	-	X
15	X	-	-	-	X
16	-	-	-	-	X
17	X	X	X	X	-
18	-	X	X	X	-
19	X	-	X	X	-
20	-	-	X	X	-
21	X	X	-	X	-
22	-	X	-	X	-
23	X	-	-	X	-
24	-	-	-	X	-
25	X	X	X	-	-
26	-	X	X	-	-
27	X	-	X	-	-
28	-	-	X	-	-
29	X	X	-	-	-
30	-	X	-	-	-
31	X	-	-	-	-
32	-	-	-	-	-

NOTE: "-" indicates an open jumper location
"X" indicates an installed jumper

JUMPER #4: RELAY RESET MODE:

The relay reset mode pertains only to relays that are established for latching operation.

The activation of any output relay will first unlatch any (latched) relay when the relays are in the no-two-operate-at-a-time mode of operation.

The relays designated for latching operation can be latched and unlatched independently of one another when the relays are in the independent reset mode of operation.

Programming for the Models 6003-6 and 6003-6D:

Jumper #4 programs the relay reset action for the Models 6003-6 and 6003-6D.

SPECIFICATION		JUMPER #4
RELAY RESET MODE	NO-TWO-OPERATE	INSTALLED
	INDEPENDENT	OPEN POSITION

Programming for the Model 6003-12:

Jumpers #21 and #22 are used in conjunction with jumper #4 to program the relay reset action for the Model 6003-12.

TABLE 3-2 explains the programming for these jumpers.

TABLE 3-2

RELAY RESET MODE

JUMPER 4	JUMPER 21	JUMPER 22	RELAYS 1-6	RELAYS 7-12
-	X	X	no-2-of-6	no-2-of-6
-	X	-	independent	no-2-of-6
-	-	X	no-2-of-6	independent
-	-	-	independent	independent
X	X	X	no-2-of-12 operate at a time	

NOTE: "-" indicates an open jumper location
"X" indicates an installed jumper

JUMPER #5: Tone Response Selection:

Jumper #5 permits the operator to select or deselect the tone responses that are normally given in response to executed commands.

SPECIFICATION		JUMPER #5
TONE RESPONSE	INHIBITED	INSTALLED
	ACTIVE	OPEN POSITION

JUMPERS #6 - #10: ACCESS CODE SELECTION:

SEE JUMPER #3 and TABLE 3-1

JUMPERS #11 - #16: RELAY ACTION:

Jumpers #11 - #16 program momentary or latching relay action for relays 1-6. TABLE 3-3 explains the programming for jumpers 11-16. The relay action is also affected by the control code format. The control code formats are described in SECTION 4.

Jumper 20 programs relays 7-12 in the Model 6003-12 for latching or momentary operation.

TABLE 3-3

RELAY ACTION

JUMPER NUMBER	RELAY	OPTION	
		OPEN POSITION	JUMPER INSTALLED
11	1	LATCHING	MOMENTARY
12	2	LATCHING	MOMENTARY
13	3	LATCHING	MOMENTARY
14	4	LATCHING	MOMENTARY
15	5	LATCHING	MOMENTARY
16	6	LATCHING	MOMENTARY
Model 6003-12 Only:			
20	7-12	LATCHING	MOMENTARY

JUMPERS #17 AND #18: AUDIO COMMUNICATION SELECTION:

SPECIFICATION		JUMPER
AUDIO COMMUNICATION	4-WIRE	#18 INSTALLED
	2-WIRE	#17 INSTALLED

JUMPER #19: ACCESS OPERATION:

Jumper #19 programs the remote control to respond to a 12 key DTMF format or to a 16 key DTMF format.

SPECIFICATION		JUMPER #19
ACCESS OPERATION	"A OR B"	INSTALLED
	"* OR #"	OPEN POSITION

JUMPER 20: RELAY ACTION:

SEE JUMPERS 11-16.

JUMPERS 21 AND 22: RELAY RESET ACTION:

SEE JUMPER 4.

SECTION 4

OPERATION

OPERATION INDICATORS:

Three light emitting diodes on the main circiut board provide the user with system status information. These indicators function as follows:

CR1A POWER

CR12 VALID TOUCH-TONE(R) DIGIT

CR13 TRANSMIT KEY

FIGURE 2-1 will assist you in locating these indicators.

You should note that the valid Touch Tone® digit indicator, CR12, may only blink in response to some remote control commands. This is normal.

OPERATION INDICATORS FOR THE MODEL 6003-6D:

The Model 6003-6D includes a display in the cover for the presentation of system status.

Output indicators, when illuminated, indicate output relays which are energized.

Input indicators, when illuminated, indicate inputs which are shorted to circuit common.

The operation of the T-T and KEY indicators is the same as the operation of CR12 and CR13 and previously described under OPERATION INDICATORS.

ACTIVATION OF THE 6003 FOR A TRANSACTION;

With jumper J19 installed the operator must send the DTMF digit "A" in order to activate the 6003 when an ACCESS CODE is not required.

The 6003 responds to the operator with a 5-second long tone burst when it has been activated to advise the operator that he has gained access to the system an can proceed to operate the 6003.

With jumper J19 in the open position the operator need not send a DTMF digit when a ACCESS CODE is not required. The 6003 will

automatically respond to any valid DTMF command sent.

ACCESS CODE OPERATION:

If an access code is required (by jumper programming) then it must be entered at this time.

With jumper #19 installed the operator must send the DTMF digits "A0" and then the access code as programed by jumpers J6-J10.

With jumper #19 in the open position the operator must send the DTMF digits "*0" and then the access code as programmed by jumpers J6-J10.

If an incorrect access code is entered then the remote control will return an error signal to advise the operator that the entry was not accepted. This error signal is a series of ten tones.

When the correct access code is entered the remote control will respond with a single, 5-second long tone to advise the operator that he has sent a valid access code and has gained access to the remote control.

SINGLE DIGIT CONTROL CODE FORMAT:

When the single digit mode of operation has been selected (by jumper programming) the remote control will respond to single digit control codes. Certain two-digit control codes permit additional flexibility in this mode.

Execution of a control code commences as soon as the digit is validated. Execution of a two-digit control code commences as soon as the second digit is validated.

Momentary relay closures are maintained for the duration of the control tone. Software timing assures that the output relays are closed for a minimum of 250 mS whenever a valid remote control codes is detected.

TABLE 4-1 outlines the single digit control code format.

High/Low Group Selection:

*8 and #8 select the high or low group of inputs and outputs for remote control and status monitoring. The low group is selected upon powerup and all remote control and status monitoring commands will effect the low group until *8 is used to switch to the high group. Then all remote control and status monitoring operations will pertain to the high group until #8 is sent to reselect the low group of inputs and outputs.

RELAY CONTROL OPERATIONS WITHIN THE SINGLE DIGIT CONTROL CODE FORMAT:

The relay action is governed by jumper programming and by the control codes. Interactions between the control code format and jumper programming are explained in this part of SECTION 4.

Momentary relay closures are maintained for the duration of the control tone plus 250 ms.

Alternate Action:

This pertains to relays established for latching operation only.

When one of the single digit relay control codes, 1-6, is sent then the respective relay will switch to the opposite state. As such, the relay will latch if it was unlatched before the control code was received or unlatch if it was latched before the control code was received.

Latch/Unlatch Operations:

This pertains to relays established for latching operation only.

When one of the two-digit relay control codes are sent then the first digit will instruct the relay to latch (*) or unlatch (#) and the second digit will identify the particular relay to be operated.

TABLE 4-1

SINGLE DIGIT CONTROL CODE FORMAT

CODE	FUNCTION
1	Operate relay #1
2	Operate relay #2
3	Operate relay #3
4	Operate relay #4
5	Operate relay #5
6	Operate relay #6
7	Command Clear- Clears a partially entered two-digit command
8	Select audio monitor for 15 seconds
9	Send relay output status
0	Send input status
*1 - *6	Operate the relay designated by the second digit
#1 - #6	Unlatch the relay designated by the second digit
*7	Group latch- latch all of the relays 1-6
#7	Group unlatch- unlatch all of the relays 1-6
Model 6003-12 Only:	
#8	Select the low group of relays for control and status
*8	Select the high group of relays for control and status

NOTE: Other combinations will cause error signals to be returned.

Interactions For The Independent Relay Reset Action In The Single Digit Control Code Format:

The group latch relay control code (*7) will not operate as expected if any of the relays are programmed for momentary operation. Under these conditions the group latch command will cause all of the relays to be operated momentarily with all outputs unlatched after the execution of the group latch command.

The group unlatch relay control code (#7) will operate normally or any relays established for latching operations even if one or more of the relays is programmed for momentary operation.

Control codes #1-#6 do nothing for momentary relays but will cause a response tone to be returned to the operator.

Interactions For The No-2-Operate Relay Reset Action In The Single Digit Control Code Format:

Activation of a relay which is programmed for momentary operation will first reset any latched relay.

The group latch relay control code (*7) is invalid when the no-two-operate-at-a-time relay reset option is selected and an error signal will be returned to the operator.

MULTIPLE DIGIT REMOTE CONTROL CODE FORMAT:

When the multiple digit mode of operation has been selected (by jumper programming) the remote control will respond to four digit control codes for relay control and two digit control codes for the other functions.

Execution of a control code commences as soon as the last digit is validated with momentary relay closures maintained for the duration of the last digit. The output relay is energized for a minimum of 250 mS when the digits are sent at high speed.

TABLE 4-2 outlines the multiple digit code format.

RELAY CONTROL OPERATIONS WITHIN THE MULTIPLE DIGIT COMMAND FORMAT:

The relay action is governed by jumper programming and by the control codes. Interactions between the control code format and jumper programming are explained in this part of SECTION 4.

Relays that are establised for momentary operation by jumper programming cannot be latched by the use of the latch or unlatched commands.

Special Momentary:

A special momentary mode of operation is a feature of the multiple digit control code format.

Relays that are established for latching operation may be operated momentarily if the multiple digit code structure is used and the first digit of the code is a "3" for the low group of relays or a "4" for the high group of relays. See also TABLE 4-2.

TABLE 4-2

MULTIPLE DIGIT CONTROL CODE FORMAT

CODE	FUNCTION
101*-106*	Operate the relay in the lower bank designated by the third digit
101#-106#	Unlatch the relay in the lower bank designated by the third digit (only valid when the latching option is selected for the respective relay)
109*	Lower bank group latch
109#	Lower bank group unlatch
201*-206*	Operate the relay in the upper bank designated by the third digit
201#-206#	Unlatch the relay in the upper bank designated by the third digit (only valid when the latching option is selected for the respective relay)
209*	Upper bank group latch
209#	Upper bank group unlatch
301*-301*	Operate the relay in the lower bank designated by the third digit for the duration of the last digit plus 2 seconds

309*	Operate all of the relays in the lower bank for the duration of the last digit plus 2 seconds
401*-406*	Operate the relay in the upper bank designated by the third digit for the duration of the last digit + 2 seconds
409*	Operate all of the relays in the upper bank for the duration of the last digit + 2 seconds
50	Send the relay output status for the lower six relay outputs
51	Send the relay output status for the upper six relay outputs
60	Send the input status for the lower six logic inputs
61	Send the input status for the upper six logic inputs
70	Select the audio monitor cut through for 15 seconds
80	Select 1000 Hz test tone for 15 seconds
9	Not assigned- Error signal returned
0	Not a valid first digit- Error signal returned

NOTE: Codes for operation of upper bank functions pertain to the Model 6003-12 only.

NOTE: Other combinations will cause error signals to be returned.

Interactions For The Independent Relay Reset Action In The Multiple Digit Command Structure:

The group latch relay control codes (109* and 209*) will not operate as expected if any of the relays are programmed for momentary operation. Under these conditions the group latch

command will cause all of the relays to be operated momentarily with all outputs unlatched after the execution of the group latch command.

The group unlatch relay control codes (109# and 209#) will operate normally on any relays established for latching operations even if one or more of the relays is programmed for momentary operation.

Control codes 101# - 106# and 201# - 206# do nothing for momentary relays but will cause a response tone to be returned.

Interactions For The No-2-Operate Relay Reset Action In The Multiple Digit Command Structure:

Activation of a relay which is programmed for momentary operation will first reset any latched relay.

The group latch relay control codes (109* and 209*) are invalid when the no-two-operate-at-a-time relay reset option is selected and an error signal will be returned to the operator.

Interactions For The Special Momentary Control Codes:

When the special momentary control code is used on a latched relay the relay will unlatch after the momentary operation is completed.

STATUS RESPONSES:

All relay control operations are followed by a tone response that advises that a command has been properly received and executed.

The remote control cannot receive a new remote control code when it is returning a tone response.

The tone response reflects the actual state of a relay after the command has been executed. This gives the operator has a positive indication that the operation has left the relay in the desired condition.

All momentary relay operations are followed by a high frequency and then low frequency tone response.

All operations to latch a relay are followed by a high frequency tone response and all operations to unlatch a relay are followed by a low frequency tone response.

The special momentary tone response is different than the tone response for normal momentary relay operations. The special momentary tone response is a high frequency tone for the duration of the relay actuation and then a high frequency tone and a low frequency tone is sent after the relay drops out.

STATUS REQUESTS:

Status request codes can be sent which will cause the remote control to return the condition of the six relays or the condition of the six inputs. TABLE 4-1 specifies the status request codes for the single digit control code format and TABLE 4-2 specifies the status request codes for the multiple digit control code format.

Relay Status Requests:

When a relay status request code (9, 50 or 51) is received the remote control will return a series of six tones to the operator which indicates the condition of the six output relays. The first tone returned corresponds to relay #1, the second tone returned corresponds to relay #2, etc.

High frequency tones that are returned indicate latched relays and low frequency tones that are returned indicate unlatched relays. Of course, relays programmed for momentary relay action will always cause a low frequency tone to be returned.

Input Status Requests:

When an input status request code (0, 60 or 61) is received then the remote control will return a series of six tones which indicates the condition of the six inputs. The first tone returned to the operator corresponds to input #1, the second tone returned to the operator corresponds to input #2, etc.

High frequency tones that are returned indicate inputs which are closed (to circuit common) and low frequency tones that are returned indicate inputs which are open.

ERROR RESPONSES:

The remote control will send an error response when it receives a control code which is not defined according to TABLE 4-1 or TABLE 4-2.

This error response is a series of five quick tones.

SELECTION OF THE AUDIO MONITOR CUT THROUGH:

When the monitor audio cut through code is received the remote control will send a high frequency tone to signal the acceptance of the code and will then complete the monitor audio signal to the Audio Communication terminals for 15 seconds.

The remote control cannot respond to a new remote control code during the monitor audio cut through operation.

SELECTION OF THE 1 KHZ TEST TONE:

The remote control will return a 1 KHz tone to the telephone line when the 1 KHz test tore code is received.

The remote control cannot respond to a new remote control code during the operation of the 1 KHz test tone.

DEACTIVATION:

If an access code is required by jumper programming then the 6003 can also be deactivated by sending a DTMF charactor "B or #" (determined by J19) which will cause the access code to be required to be reentered.

The 6003 will automatically deactivate after approxinately 35 seconds without activity.

Several seconds before the 6003 deactivates itself it will send a warning tone to advise the operator of its intention to deactivate.

This tone response is inhibited if the board jumper #5 is installed .

The operator can send additional codes after the warning tone to keep the 6003 on line for additional 35 seconds.

LOCAL CONTROL OPERATIONS:

A self powered DTMF generator (such as the CES 340J) can be connected locally at J2 for testing and local control. FIGURE 2-1 will assist you in locating J2.

The remote control will respond to the control codes in the sane manner as if they had been received from the Audio Communication terminals during normal operation.

An access code is not required for local control operations.

SECTICN 5

MAINTENANCE

FUSE F1:

The remote control should be returned to the factory for repair in the event that this fuse fails.

Do not attempt to bypass the blown fuse and continue to operate the remote control.

CPERATION OF THE REMOTE CONTROL WITH THE BOARD REMOVED FROM THE BASE:

Make sure that the heat sink for the voltage regulators, A2 and A3, remains in place when the remote control is operated while it is removed from its base.

You will have to secure A2 to the circuit board and heat sink using a 4-40 hex nut (not provided).

(AUDIO) ADJUSTMENTS:

A number of potentiometers permit adjustment of transmitted and received audio signals.

Received Audio Level:

R12A permits the user to adjust the level of the received DTMF remote control tones. This adjustment would be made when the received audio levels are too low or too high to permit reliable decoding of the commands. These conditions exist when transmission line loss is high or the source of the tones is very close.

Transmitted Audio Level:

R21 permits the user to adjust the audio level which is transmitted by the remote control. This potentiometer should be set for the desired audio listening level for the tone responses.

Monitor Audio Level:

R32A permits the user to adjust the audio level for the monitor audio input. This potentiometer should be set for the desired audio listening level at the operating station.

NOTE: The Transmitted Audio Level adjustment should be made prior to adjustment for the Monitor Audio Level.

SECTION 6

RETURN POLICIES AND PROCEDURES:

Factory Repair:

Return authorizations are not required for factory repair work, however, purchase order numbers covering the repair work are desired.

Material returned to the factory for repair should be accompanied by a description of the problem as well as the name and telephone number of a person to contact in case we wish to consult with the customer about the repair. Legible billing and shipping addresses should also be included.

Material returned to the factory for warranty repair must be accompanied by a copy of a dated invoice or bill of sale which serves as a proof of purchase for the material.

Repairs will be returned promptly. Repairs are normally returned to the customer by UPS within ten working days after they are received by Monroe Electronics, Inc. Return (to the customer) UPS charges will be paid by Monroe Electronics on warranty work. Return (to the customer) UPS charges will be prepaid and added to the invoice for out-of-warranty repair work.

Expedited Factory Repair:

All material returned to the factory by air or by an overnight service will be expedited.

Expedited factory repairs will be returned to the customer by the same mode of transportation by which the material was returned to the factory for repair (i.e. material returned to the factory by an overnight service will be returned to the customer by an overnight service).

> NOTE: Return (to the customer) transportation expenses for expedited factory repairs will always be at the expense of the customer regardless of the warranty status of the equipment.

Factory Repairs to Modified Equipment:

Material returned to the factory for repair which has been modified will not be tested unless the nature and purpose of the modification is understood by us and does not render the equipment untestable at our repair facility.

We will reserve the right to deny service to any modified equipment which is returned to the factory for repair regardless of the warranty status of the equipment.