ADEMCO INSTALLATION INSTRUCTIONS

No. 698 STU SUBSCRIBER TERMINAL UNIT

SYSTEM OVERVIEW

The ADEMCO No. 698 SUBSCRIBER TERMINAL UNIT (STU) is one of several components used in a derived channel alarm network - a system which utilizes the telephone communication network for alarm reporting and system monitoring while permitting full use of the telephone.

In a typical derived channel network, alarm and status messages are sent from the subscriber premises to a local telephone exchange station, to the main telephone office and finally to the alarm monitoring central station. At each location is a piece of equipment which performs a portion of the alarm reporting process.

The No. 698 Subscriber Terminal Unit is located at the subscriber premises and links the customer's alarm system to the derived channel network. The STU converts signals from the control panel into a format suitable for phone line transmission. Additionally, the STU also generates an inaudible supervisory signal which provides both on-hook and off-hook system security.

The local area telephone exchange communicates with the STU via the system scanner. With the phone in the on-hook state, the scanner sequentially polls (at least every 40 seconds) all subscriber terminal units assigned to it (up to 2048) and then reports all status, alarm and diagnostic messages to the main telephone office.

All messages sent from the scanners are received by the computer located at the main telephone office. When the computer polls the scanners and receives all information from the scanners, it then records all messages and then relays the information to the appropriate central station.

Located at the central station is the **Agency Terminal Unit (ATU)** - a device which converts the relayed message from the main telephone office computer into the appropriate format required by the resident central station receiver. The ATU also converts outgoing central station messages into a format required by the main telephone office computer.

SYSTEM FEATURES

The ADEMCO No. 698 SUBSCRIBER TERMINAL UNIT and the derived channel system in general offer the following features:

FULL SUPERVISION — All STU's are constantly monitored by a scanner which listens for a supervisory signal generated by the STU. Should the phone line be cut, the STU malfunction or an alarm condition arise, the supervisory signal will cease and will initiate an immediate poll.

ON/OFF HOOK OPERATION

The No. 698 STU functions as a phone extension and permits full use of the supervised line for phone conversations. Scanner polling of the STU is suspended during the off hook mode but the inaudible supervisory signal provides system security. Alarm reports will cause two short "beeps" to be heard on the line.

FAIL-SAFE OPERATION

The system network is designed in such a way that if any component should malfunction another (redundant) component will take its place.

MICROPROCESSOR/PROM CONTROL

The latest technology affords the STU reliability, low maintenance and easy installation.

OPERATION

The ADEMCO No. 698 SUBSCRIBER TERMINAL UNIT (STU) is that part of the derived channel network which links the alarm control at the subscriber's premises to the rest of the system. The STU converts signals from the alarm control panel into messages for transmission to the telephone company central office scanner. The scanner will relay the message to the main office computer which, in turn, delivers the message to the appropriate central station ATU.

During on-hook and off-hook operation, the STU emits a low frequency supervisory signal to the system scanner located at the local phone exchange. While the telephone is in on-hook mode, the scanner listens for this tone and polls the STU for status information. (All polling and responses occur in the voice band. While the the telephone is off-hook, routine polling is suspended so as not to interfere with phone conversations. The scanner still monitors the STU's sub-audible supervisory signal. Should an alarm occur, the STU will stop generating a supervisory signal. When the scanner detects the loss of the supervisory signal, it will poll the STU which will then report the alarm even though the phone is in use. The supervisory signal will resume after an acknowledgment is received by the STU from the scanner.

In the event a STU has not been polled, the STU will notify the scanner by transmitting a special high tone (called Wail Tone). The scanner will poll the STU immediately and the alarm message will be transmitted. The person using the phone at that time will be able to hear this information exchange.

The STU's poll response consists of its status message preceded by a subscriber identification number. This number is programmed by the installer and identifies the STU to the scanner. The scanner, upon receiving the status message, assigns its own number to the STU message. This helps ensure security and identifies the STU to the central station.

There are twelve possible alarms which fall into two categories: latched and unlatched. Latched alarms are those alarms generated by the eight input connections (channels 1-8) and by the tamper switch. Latched alarms cause the STU to remain in an alarm state until the alarm condition has been acknowledged by the central station. Unlatched alarms refer to other situations: AC power failure and internal diagnostic messages.

The STU alarm inputs are activated by application or removal of a 3.5V - 12V.DC input or by the opening or closure of a dry contact. These inputs are then coded into a type of event (i.e. alarm, restore, open close, etc), changed into a format suitable for phone line transmission and then, upon poll receipt, are sent to the scanner. The alarm report is completed when the STU receives

an acknowledgment both from the scanner and from the central station. The alarm codes received at the central station correspond to the ADEMCO HIGH SPEED FORMAT codes.

The ADEMCO HIGH SPEED FORMAT transmission consists of a 13 digit message with each digit location representing one of three categories. The first four-digits the **SUBSCRIBER IDENTIFICATION NUMBER.** Assigned by the installer, the SUBSCRIBER IDENTIFICATION NUMBER helps identify the STU to the rest of the system. The next eight digits (5-12) represent the status of each of the eight **INPUT CHANNELS.** The last message location (digit 13) is a special **STATUS CHANNEL.** The code appearing in this digit location indicates the meaning of the codes appearing in locations 5-12.

The following table describes the message codes and how they pertain to the status code in location 13.

LOCATION 13	MEANING
5	When a **code 1** appears in any of the eight message zones this means a zone trouble at that zone.
6	(a) With a **code 1** in **location 4** this means that power has been restored to the STU.
	(b) With a **code 1** on **location 5** this means that the STU has failed to respond to a poll.
	(c) With a **code 3** in **location 5** this means that communication with the STU has been restored.
7	All systems are operating normally and any codes displayed denote the meanings described in the code chart previously described.
8	Low BATTERY
9	System test

When a code 7 appears in message location 13 then all codes appearing in message locations 5-12 are defined as listed in the table below.

The following codes are displayed on the ADEMCO No. 685 receiver.

CODE	MEANING	
0	FAULT	(System or STU trouble)
1	NEW ALARM	(Previously unreported alarm)
2	OPENING	(Armed system now disarmed)
3	RESTORE	(Previously reported alarm is resolved)
4	CLOSING	(Disarmed system is now armed)
5	NORMAL	(No event since the last report)
6	PREVIOUSLY REPORTED	(Previously reported alarm or opening still in effect)

The following chart demonstrates the codes appearing on the No. 685. (Note: The Sub's ID number, 5890, is supplied for demonstration purposes only. The number 0000 in the SUB'S ID column indicates a system malfunction.)

MESSAGE	SUB'S ID	INPUT CHANNELS	STATUS
COMM. LOST W/TELCO COMPUTER	0 0 0 0	5 5 5 5	5 5 1 5	5
COMM. RESTORED W/TELCO COMPUTER	0 0 0 0	5 5 5 5	5 5 3 5	5
COMM. LOST W/ATU	0 0 0 0	5 5 5 5	5 5 5 1	5
COMM. RESTORED W/ATU	0 0 0 0	5 5 5 5	5 5 5 3	5
ZONE TROUBLE IN CHANNEL 5	5 8 9 0	5 5 5 5	1 5 5 5	5
LOSS OF AC POWER TO STU	5 8 9 0	1 5 5 5	5 5 5 5	6
RESTORED AC POWER TO STU	5 8 9 0	3 5 5 5	5 5 5 5	6
LOW BATTERY ALARM	5 8 9 0	5 1 5 5	5 5 5 5	6
LOW BATTERY RESTORE	5 8 9 0	5 3 5 5	5 5 5 5	6
SUBSCRIBER SYSTEM FAILURE	5 8 9 0	5 5 1 5	5 5 5 5	6
SUBSCRIBER SYSTEM RESTORE	5 8 9 0	5 5 3 5	5 5 5 5	6
STU POWER ON RESET	5 8 9 0	5 5 5 1	5 5 5 5	6
685-9 LINE CARD RESET	0 0 0 0	5 5 5 1	5 5 5 5	6
COMM. LOST W/STU	5 8 9 0	5 5 5 5	1 5 5 5	6
COMM. RESTORED W/STU	5 8 9 0	5 5 5 5	3 5 5 5	6
NEW ALARM IN CHANNEL 5	5 8 9 0	5 5 5 5	1 5 5 5	7
ALARM RESTORED IN CHANNEL 5	5 8 9 0	5 5 5 5	3 5 5 5	7
NEW OPENING IN CHANNEL 5	5 8 9 0	5 5 5 5	2 5 5 5	7
NEW CLOSING IN CHANNEL 5	5 8 9 0	5 5 5 5	4 5 5 5	7
ALL CHANNELS NORMAL	5 8 9 0	5 5 5 5	5 5 5 5	7
PREVIOUSLY REPORTED	5 8 9 0	5 5 5 5	6 5 5 5	7

The STU may be powered from a standard ADEMCO power supply such as an ADEMCO No. 487 or 492NL, with its rechargeable battery backup or may, as an alternative, receive power directly from the alarm control. Operational fitness and the presence of power is indicated by a blinking red LED located on the circuit board.

INSTALLATION

The ADEMCO No. 698 Subscriber Terminal Unit consists of a printed circuit board enclosed inside a metal protective housing that can be mounted inside an alarm control panel cabinet (such as ADEMCO's No. 204 and No. 8205 cabinets). Once installed, it will provide a programmable interface between controls such as the ADEMCO Alarm Processing Center (Nos. 1021, 1021-12, 4080, 4080-12 etc.) and the derived channel network.

Installing the No. 698 STU involves the following procedures:

- Mounting the STU
- Making all connections
- Programming and installing the PROM
- Notifying the central station of the installation

Before starting, be certain the central station has made arrangements with the phone company regarding this installation.

Mounting the STU

It is extremely important that you select an appropriate operating site for the STU. The unit should be mounted inside a cabinet in an environment which is free from extremes of temperature and humidity.

TEMP:	0 degrees C to 55 degrees C (32 degrees F to +131 degrees F)
HUMIDITY:	0% to 95% noncondensing

WARNING!

- For safety sake, be certain there is no power connected to the system before executing the installation procedures. Remove all fuses from the STU and from the alarm control panel. Disconnect AC power from the control panel.

- Environmental conditions are critical as the digital components are susceptible to component failure due to moisture. **DO NOT** mount the STU in an area where moisture is evident or where it might potentially accumulate due to condensation. Insulate the protective cabinet when mounting it on an outside wall.

- Be aware that components transported from a cold environment (for instance, a service vehicle) into a climate controlled area will cause condensation. Be careful to remove any moisture from the board.

- **DO NOT** mount the STU where it will be subject to any electrical disturbance.

PROCEDURES:

Mount the STU inside an alarm processing center cabinet (such as the ADEMCO Nos. 8205CL, 204 or 204XL) by positioning the STU tabs into the cabinet slots and secure with a #6 sheet metal screw. The inner lip of the mounting bracket is installed over the edge of the cabinet.

The circuit board **MUST BE MOUNTED RIGHTSIDE UP.** Make certain that the connector terminals are on the bottom and that the microprocessor is on top.

The STU may be mounted horizontally, component side up only.

MAKING ALL CONNECTIONS

Wiring the STU involves the following procedures:

1. Making connections to the phone line
2. Making connections to the power source
3. Making alarm input connections

This section will refer to circuit board connections 1-20. The connections are referred to as Nos. 1-20 reading from left to right with the terminal strip on the bottom of the board.

Before making any connections, make certain there is no power present at the system.

Phone Line Connections:

1. Run a two conductor wire from the tip and ring terminals in a telephone junction box to the STU in the control cabinet. (Generally, ring is red and tip is green.)

2. Connect the tip wire to terminal number 1.

3. Connect the ring wire to terminal number 3.

POWER SOURCE CONNECTIONS:

1. Determine whether the STU will be operating on 6 Volts or 12 Volts. If the unit will be operating on 12 volts, then cut the jumper wire located at circuit board location JB-5. If the unit is to operate on 6 volts, then the jumper is left intact.

2. Determine which are the positive(+) and negative(-) connections on the power supply.

3. Be certain that the fuse has been removed from the STU and that the power supply is not on. Connect the red flying lead from the STU to the positive power supply terminal and the black flying lead from the STU to the negative power supply terminal.

4. Be certain the black ground wire at circuit board location GH-1 is firmly connected to the transformer (location T1). Replace all fuses removed in Step 3.

5. Turn on the power supply. Check the voltage of the external power supply with a voltmeter (6.9 - 7.05 volts for 6V operation with AC present or 13.8 - 14.1 volts for 12V operation with AC present).

6. Verify operational fitness by checking that the red LED (circuit board location CR-1) is blinking about once every five seconds. If the LED is not blinking, then the STU is not functioning and it must be replaced.

NOTE

Before replacing the STU make certain its failure is not due to moisture or cold. Remove any moisture or bring the STU to ambient room temperature using a hot air device (hair dryer, etc.).

Alarm Input Connections:

When wiring the STU locally to the alarm control, use standard bell gauge wire or larger. Increase the wire gauge appropriately as the distance between the STU and the control panel increases.

The following information describes the alarm connection functions.

CONNECTION	USE	APPLICATION
1	TIP	Generally green telephone connection
2	NOT USED	
3	RING	Generally a red telephone connection
4,5	V+ OUTPUT	Both of these connections provide positive voltage for testing or for circuit activation through a dry contact. By momentarily connecting a lead from 4 or 5 to an alarm input, an alarm condition is simulated.
6-13	ALARM INPUTS	There are eight alarm inputs (channels 1-8) which may be individually configured by programming the PROM.
14, 15, 16	ELECTRICAL GROUND	These connections provide electrical ground for connections to the circuit board.
17	NOT USED	
18	OUTPUT	When permitted by the phone company, this output may be used to control devices in a customer's premises from the central station. When activated, pin 18 goes low, thereby providing a ground.
19, 20	NOT USED	

PROGRAMMING THE PROM

The ADEMCO No. 698 Subscriber Terminal Unit may be programmed with a number of options which determine how the system will operate and how the system will report messages. The required PROM may be programmed by ADEMCO (No. 691P11) or may be programmed by the installer (No. 691) using the ADEMCO No. 690 PROM Programmer.

Programming the PROM includes entering all option selections in the charts which accompany the text and then executing the procedures that follow the programming sheet.

There are two kinds of programming options. Channel option and input select determine the channel response time (150 ms or 16 second delay), operation (not connected, normal, or inverted), message (open/close or normal) and input select (long or short report and with or without outstanding report). The system programming option defines the Subscriber Identification Number (which identifies the STU to the scanner) and wail tone delay option.

The No. 691 PROM provides 32 words of data with each word 8 bits in length. By entering the appropriate code the user configures the STU to operate in the manner required by the system.

The following information presents all of the programming options and required codes. Determine what options are required and enter the codes on the PROM PROGRAMMING COMPILATION SHEET which follows the information section. Program the PROM using the programming procedures which follow the PROM PROGRAMMING COMPILATION SHEET.

IMPORTANT!

Please notice that the options are presented in a slightly different order than the charts on the program sheet. **PROGRAM THE PROM IN THE ORDER THAT THE INFORMATION IS PRESENTED ON THE PROGRAM SHEET.**

PROM PROGRAMMING COMPILATION SHEET

Compile all PROM selection on this sheet **BEFORE** programming the PROM. Refer to the text for programming procedures. (The circle indicates the rotary switch position and the rectangle indicates the position of the **PHONE** switch.)

PROGRAMMING SECTION I: THE CHANNEL OPTIONS

ALARM INPUT SELECT

SELECTION OPTIONS	SELECTION CODE
NO ALARM CONNECTIONS	8
NORMAL INPUT W/NO DELAY Normal: Input voltage less than 1.7 volts. Alarm: Input voltage exceeds 3.3 volts.	1
INVERTED INPUT W/NO DELAY Normal: Input voltage exceeds3.3 volts. Alarm: Input voltage less than 1.7 volts.	3
NORMAL W/A 16 SECOND DELAY	5
INVERTED INPUT W/A 16 SECOND DELAY	7

REPORT SELECT

The INPUT SELECT determines the type and amount of information included in each report. **INSTALLATIONS USING THE ADEMCO No. 685 RECEIVER REQUIRE LONG REPORT WITH NO PREVIOUS ALARM REPORT** (Code **6**).

For this option	ENTER CODE
EITHER LONG OR SHORT REPORTS If only one channel is triggered then a short report is issued with only that channel reported. With more than one channel triggered, a long report is issued indicating the status of all channels. This entry will appear as a **U** (unused) when previewed.	ENTER NOTHING
LONG REPORTS ONLY When any channel is triggered, a long report is issued indicating the status of all channels.	2

EITHER LONG OR SHORT REPORT W/NO PREVIOUS ALARM REPORTING..4
STU will report either LONG or SHORT, as described above, with the exception of PREVIOUS ALARM reports. The STU **will not** report transitions from ALARM to PREVIOUSLY REPORTED.

LONG REPORTS ONLY W/NO PREVIOUS ALARM REPORTING.....6
STU will send LONG REPORTS only and **will** report PREVIOUS REPORT messages (outstanding) upon reporting subsequent alarm messages.

CHANNEL ACTIVATION/RESTORE

Configuring this entry determines how channel activity will be reported. If channel activation is selected, then an alarm will simply be reported. If CHANNEL ACTIVATION/RESTORE is selected, an activation will be reported and when the activation has been removed, a RESTORE message will be reported.

SELECTION OPTIONS	SELECTION CODE
Both CHANNEL ACTIVATION and RESTORE REPORTED	1
CHANNEL ACTIVATION ONLY REPORTED	8

SELECT INPUT TYPE

This option determines which channel will report an **OPEN/CLOSE** message.

SELECTION OPTION	SLIDE SWITCH POSITION
NORMAL REPORTING	DOWN = D
OPEN/CLOSE REPORTING	UP = U

PROGRAMMING SECTION II: SYSTEM OPTIONS

SUBSCRIBER IDENTIFICATION NUMBER

This option enables the scanner to identify the unit. Enter the identification number as requirements dictate.

WAIL TONE DELAY

In an off-hook situation there is a possibility that the STU will not be polled. If this were to happen, the STU, in order to gain the attention of the scanner, will issue a **Wail Tone** which will cause the scanner to poll it out of sequence. The installer can determine the length of time required to initiate the wail tone (from the moment that the alarm occurred) by programming a code into the PROM. The delay options progress in five second increments from 0 to 1275 seconds. (Sixty seconds is the recommended delay.)

EXAMPLE:

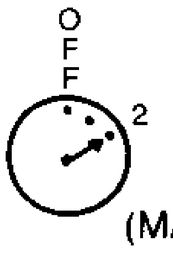
DELAY (in seconds)	**BINARY**
0 (no wail tone)	0
5	1
10	2
15	3
30	6
60	12

SWITCH POSITIONS (U = Up D = Down)

Bit wgts.	1	2	4	8	16	32	64	128
	D	D	D	D	D	D	D	D
	U	D	D	D	D	D	D	D
	D	U	D	D	D	D	D	D
	U	U	D	D	D	D	D	D
	D	U	U	D	D	D	D	D
	D	D	U	U	D	D	D	D

PROM PROGRAM COMPILATION SHEET

Compile all PROM selection on this sheet **BEFORE** programming the PROM. Refer to the text for programming procedures. (The circle indicates the rotary switch position and the rectangle indicates the position of the **PHONE** switch.)

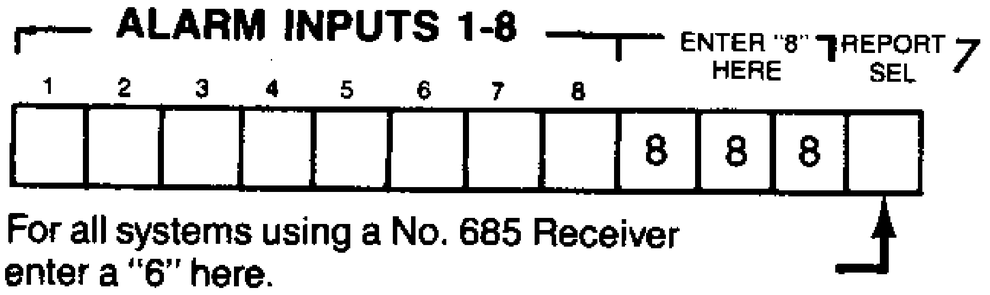


(MAIN #)

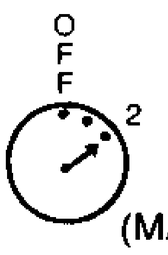
SECONDARY

ALARM INPUT and REPORT SELECT

(ENTER FROM KEYPAD)



For all systems using a No. 685 Receiver enter a "6" here.

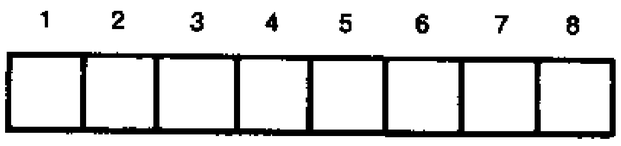


(MAIN #)

PRIMARY

CHANNEL ACTIVATION/RESTORE

(ENTER FROM KEYPAD)

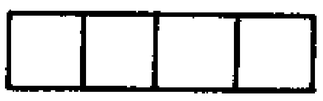


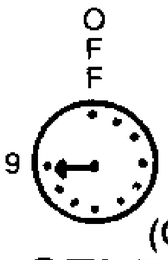
(SUB's ID)

PRIMARY

SUBSCRIBER ID

(ENTER FROM KEYPAD)

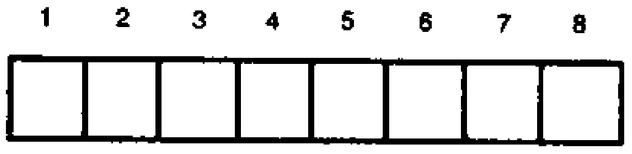




(OPEN/CLOSE)

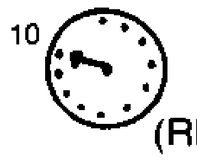
SELECT INPUT TYPE

(ENTER FROM SLIDE SWITCHES)



UP = OPEN/CLOSE REPORTS

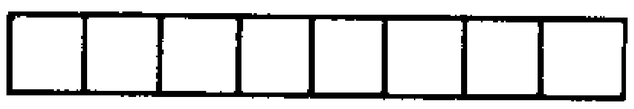
DOWN = NORMAL REPORTS



(RESTORE)

WAIL TONE DELAY

(ENTER FROM SLIDE SWITCHES)



UP = 1

DOWN = 0

PROGRAMMING SECTION III: PROGRAMMING PROCEDURES

Having completed the preceding PROM PROGRAMMING SHEET, the PROM may now be programmed. The following procedures pertain to the ADEMCO No. 690A PROM PROGRAMMER.

CAUTION!

EACH PROM may be programmed only once. Changes cannot be made once an entry has been made. **PROCEED CAREFULLY!**

Before using the slide switches, always move the switches to the down position.

STEP 1: GETTING STARTED

Plug in the programmer. **Set** the rotary dial to the **OFF** position. **Set** all slide switches to the **DOWN** position.

INSERT the ADEMCO No. 691 PROM in the **NEW PROM** socket while taking care to properly position the PROM orientation mark. Also, take care not to bend any of the PROM connector pins.

STEP 2: ALARM INPUT and REPORT SELECT

A. **TURN** the **ROTARY SWITCH** to the **MAIN #**(2) position.

B. **SET** the **PHONE #** switch to the **SECONDARY** position.

C. **WHILE** depressing the **PROGRAM** key, **ENTER** the eight **ALARM INPUT** codes, the three required "8" codes and the **REPORT SELECT** code. **RELEASE** the **PROGRAM** key.

D. **VIEW** all entries by depressing the **VIEW KEY** (*) until all numbers have appeared in the display window.

STEP 3: CHANNEL ACTIVATION/RESTORE

A. **SET** the **PHONE NUMBER** switch to the **PRIMARY** position. Leave the rotary switch at the **MAIN** # position.

B. While depressing the **PROGRAM** key, enter either a "1" or an "8" from the keypad for each of the eight channels. Release the **PROGRAM** key only after all eight channels have been assigned a number.

C. **VIEW** all channel assignments by depressing the **VIEW** Key (*).

STEP 4: SUBSCRIBER IDENTIFICATION NUMBER

A. **SET** the **ROTARY SWITCH** to the **SUBS ID** (3) position. Move the **PHONE NUMBER** switch to the **PRIMARY POSITION.**

B. While depressing the **PROGRAM** key, enter the SUBSCRIBER ID number by depressing the appropriate numbers on the keypad.

C. **VIEW** the **SUBSCRIBER IDENTIFICATION** number by depressing the **VIEW** key (*).

STEP 5: SELECT INPUT TYPE

A. **SET** the **ROTARY SWITCH** to the **OPEN/CLOSE** (9) position. **MOVE** all slide switches to the **DOWN** position.

B. Move the appropriate slide switches to the **UP** position.

C. Depress the **PROGRAM** key. An LED will indicate the **OPEN/CLOSE** channel.

STEP 6: WAIL TONE

A. **SET** the **ROTARY DIAL** switch to the **RESTORE** (10) position. **MOVE** all slide switches to the **DOWN** position.

B. **SET** all slide switches to the appropriate **UP/DOWN** delay configuration.

C. Depress the **PROGRAM** key.

NOTIFYING THE CENTRAL STATION

The following steps are performed to checkout operation of the STU:

1. Call the Central Station and report that the STU is wired and ready for checkout. Give them the STU serial number located on the label on the printed circuit board, and the subscriber's telephone number. Wait for an acknowledgment. When directed by the Central Station, activate each channel and request verification that it has registered.

2. Listen for the chirping sounds that indicate system operation. The Central Telephone Office UNIT poll and the STU response should be audible as double chirps.

3. Request verification of operation in the on-hook handset condition. Then hang up.

4. Wait three minutes, then recall the Central Station.

5. If any required indications do not register in the Central Station, make sure the tip and ring connections at terminals 1 and 3 are tight. Check the tip and ring connections in the telephone junction box. Be certain that the input channels have been properly activated. If there are no breaks in the continuity of the tip and ring connections, the STU must be replaced.

MAINTENANCE

The STU requires no periodic adjustment or maintenance. Factory adjustments normally require no readjustment in the field, and are sealed to prevent inadvertent miscalibration.

WARNING

The STU contains CMOS microcircuits which may be damaged by inadvertent application of high voltages. Dangerously high voltages can occur when an electrostatic charge is discharged. The following precautions are recommended during testing or handling of the printed circuit board and its components:

(a) Discharge any static electrical charge accumulated on your body by touching a ground connection or grounded electrical chassis before touching the PC board or component.

(b) Make sure all electrical tools and test equipment are properly grounded before use.

SUBSCRIBER TERMINAL UNIT REPLACEMENT

Replacement of a faulty STU requires a voltmeter or multimeter. Replacement is accomplished as follows:

(a) Call the central station and report that the STU is being replaced. Give them the serial numbers of both the faulty unit and the replacement unit, and the subscriber's telephone number. The serial number is located on the label on the printed circuit card.

(b) After receiving acknowledgment, unplug the power supply connection.

(c) Remove the fuse from the faulty unit.

(d) Record the alarm terminal assignments.

(e) Disconnect the channel, power supply, and tip and ring wires. If the STU is equipped with the optional RJ11C modular plug for tip and ring connection, disengage the plug from the wall jack but don't disconnect the tip and ring from the terminal blocks.

(f) Inspect the wires you have removed from the faulty STU, and trim any wires with damaged insulation.

(g) Connect the tip and ring wires and power supply according to the procedure given in the Installation Section.

(h) Test operation of the replacement STU according to the procedure given in the Installation Section.

(i) Rewire the channels using the same terminal assignments as before.

(j) Reconnect power supply and insert fuse.

(k) Call the central station and report that the STU is back in operation. Wait for verification of correct operation.

TROUBLESHOOTING

The following table describes typical Subscriber Terminal Unit trouble symptoms, possible causes, and remedies that can be accomplished in the field.

TROUBLESHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE	REMEDY
Confidence LED does not blink	No power applied to unit	1. Check power supply connections in Subscriber Terminal. 2. Verify voltage at plug-in power supply connections is between 6 and 15V.DC. 3. Replace Subscriber Terminal Unit.
Channel registers in reverse at central station	Incorrectly Programmed PROM.	1. Verify and replace PROM if necessary. 2. Replace Subscriber Terminal Unit.
Built-in Test error	Microprocessor or ROM malfunction	1. Replace Subscriber Terminal Unit.
Unit chirps when phone is in use	Active sensor	1. Normal operation - check with central station center alarm status.
No low tone while no alarm condition present.	Low-tone generator malfunction	1. Verify no-alarm condition with central station. 2. Replace Subscriber Terminal Unit.

SPECIFICATIONS

FCC REG. NO.	No. CKH78V-70802-XT-N
RINGER EQUIVALENCE	1.3B
TELEPHONE CONNECTIONS	
Type	Bridged T/R, polarity insensitive
Connection Arrangement	Screw mount (RJ11C modular plug optional)

POWER REQUIREMENTS	
External DC Power	
Voltage	6 to 12V.DC
Voltage Ripple, maximum	200 mV (rms) under full load
Current, average maximum	100 mA
INPUT/OUTPUT CONNECTIONS	
Connection Type	#4-40 SCREW
Wire Sizes Accommodated	Up to 16 AWG
Inputs	
Total Loops	8
Maximum Normally Open/ Closed Loops	8
Maximum 2-Wire Supervised Circuits	8
Input Resistance (Pull-down)	22K ohms
Configuration Control	PROM (32 words x 8 bits): ADEMCO No. 691
Alarm Signal Latch Time	Events longer than 0.15 sec (software parameter)
CONTROLLED OUTPUT	
Maximum Current	10mA
Maximum Voltage	30VDC
ENVIRONMENTAL CONSTRAINTS	
Relative Humidity	0% to 95%, noncondensing
Operating Temperature	0C to +55C (+32F to +131F)
Storage Temperature	-50C to +125C (-58F to +257F)
MECHANICAL SPECIFICATIONS	
Size	6.75 in. x 7.75 in. x 1.25 in. (17.1 cm x 19.7 cm x 3.2 cm)
Weight	0.83 lb (0.341 kg)

HOW TO ORDER:

ITEM	CAT. NO.
SUBSCRIBER TERMINAL UNIT	No. 698
PROM (unprogrammed)	No. 691
(programmed)	No. 691P11
FUSE	No. 90-12
POWER SUPPLY	No. 487, 487-12, or 492NL
CABINET	No. 8205CL, 204 or 204XL The 698STU **will not** fit into a No. 205 cabinet.

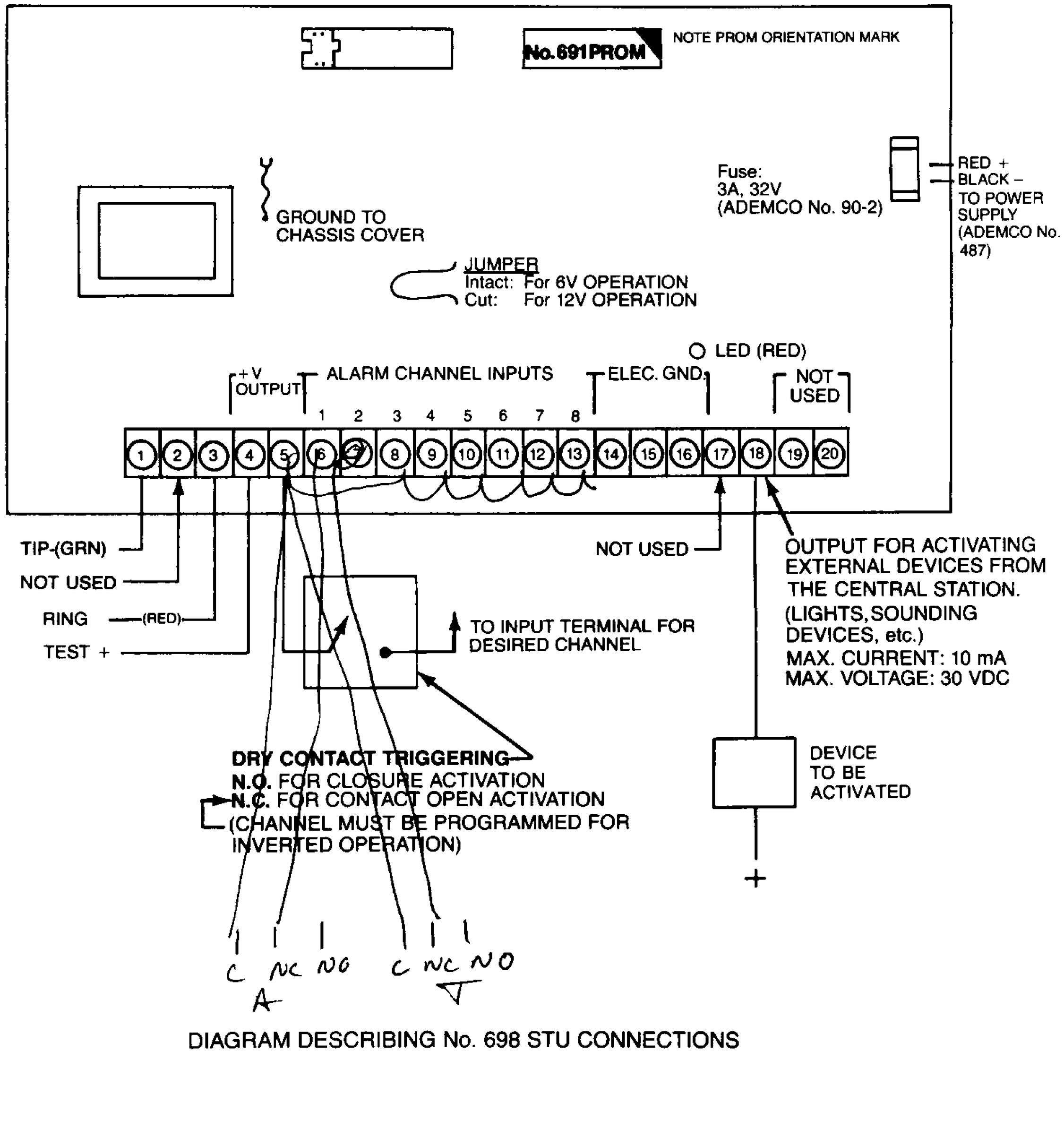


DIAGRAM DESCRIBING No. 698 STU CONNECTIONS