



# INSTALLATION INSTRUCTIONS

**No. 693**  
**4 CHANNEL**  
**DIGITAL**  
**COMMUNICATOR**

## GENERAL INFORMATION:

The 693 is a 4 channel digital communicator that transmits coded messages over the telephone system to a digital receiver located at a central monitoring station. Special leased lines are **not** required.

To accommodate various receivers, the 693 can transmit in two formats: 1) Ademco Standard (and Silent Knight) or 2) SESCOA/Franklin/DCI.

The 693 consists of a printed circuit board and plastic housing that may be installed in any suitable enclosure, such as a No. 204 or 205 Cabinet, or in the same cabinet with an Alarm Processing Center.

The 693 may be **powered** from a **6V.DC filtered rechargeable source** (or from 12V.DC by cutting BLUE and GREEN jumpers), such as (for 6V) an Ademco No. 492 or 493 Battery Pack. Alternatively, a **6V.DC unfiltered full-wave rectified source** may be used (by cutting **only** the GREEN jumper). **Caution:** The latter source must **not** contain a power transfer relay (transfer must be accomplished without interruption). The Nos. 89 and 89-12 Energy Packs may **not** be used, nor may sources containing Ni-Cad batteries (such as the Nos. 96, 97 or 497) that cannot supply at least 75 mA continuously. A common power supply from a control panel can be used, even with bells connected to the control (No. 1026 or 1028 Alarm Processing Centers may **not** be used as they contain Ni-Cad batteries such as those precluded above).

The 693 may be **triggered** by: 1) Application (or removal) of 4.5-12V.DC (battery or filtered full wave rectified) from an alarm control or other source, 2) Dry contact closure (or opening). **The unit may not be triggered from an unfiltered rectified source.**

The 693 is easily **programmed** by the positioning of four channel code leads on an 8 pin alarm code selector block and the insertion of a programmed PROM (Programmable Read Only Memory) Chip, such as the 691. PROM Chips can be programmed by Ademco or (with the No. 690 Programmer) by the installer.

The 693 has built-in **line seizure** and **telephone line surge arrestors**. Line seizure automatically disconnects all telephones in the premises on the same line with the communicator whenever the 693 is activated, to insure transmission without interruption. Surge arrestors help protect the unit from voltage surges on the telephone line.

The 693 is compatible with the Ademco family of ancillary communicator accessories, including the following:

Cat. No.	Description
620	Direct Connect Cord
659	Line Fault Monitor
684	Remote Command Tone Responder
688	Opening/Closing Switching Module
689	AC Power/Telephone Line Fault Monitor

## OPERATION

When a channel is activated, transmission to the central monitoring station occurs as follows:

1. **After the normal 150 millisecond response time (or 16 seconds delay, if so programmed) the 693 executes line seizure and forces a 1.6 second hang-up)** to insure a disconnect if an outgoing call was being made.
2. **Next, the 693 checks for dial tone.** To shorten the time required for contacting the central monitoring station, the 693 listens for internal dial tone as well as external (telephone company) dial tone.
3. **If dial tone is detected, the 693 immediately and automatically dials the preprogrammed telephone number,** which can consist of up to 4 access digits and up to 12 digits in the main (telephone company) number. Two telephone numbers can be programmed and dialed as explained in PROGRAMMING OPTIONS. Furthermore, the unit can be programmed to dial "touch tone" in lieu of the slower "pulse dial" method.

The probability of immediate dial tone detection is high, but if a dial tone is *not* detected within 11 seconds, (30 seconds, if so programmed), the unit will dial anyway, on the assumption that the connection may be good even though the dial tone is not clear.

4. **When connection is made with the central monitoring receiver, a "handshake" tone (acknowledgment) is sent over the telephone lines by the receiver to the 693.** This "handshake" confirms, to the unit, that connection has been completed to the receiver.

If "handshake" is not received within 30 seconds (60 seconds if so programmed), the communicator will disconnect itself from the telephone line. After waiting long enough (approximately 30 seconds) to disconnect any outgoing or incoming calls which might interfere with dialing ("anti-jam" which only works in "called party" control exchanges), the 693 will reconnect to the telephone line, and again seize the line, check for dial tone and dial as described in Steps 1, 2 and 3.

If necessary the 693 will make up to a total of 8 attempts (or "Unlimited Attempts", if so programmed) to reach the central monitoring station via primary and/or secondary programmed telephone numbers. See PROGRAMMING OPTIONS. (NOTE: If the "Dual Report" option, described later, is selected, the unit will make up to 8 attempts to reach each telephone number.)

5. Upon receipt of the "handshake" (acknowledgement) tone, the 693 will start transmitting its message(s), each consisting of a subscriber identification number and a 1 digit alarm code, as selected, for the channel that triggered.

Since faulty phone lines can distort the numbers, the 693 sends each message up to 4 times while the receiver compares each message with the one before it. As soon as the Receiver detects 2 successive identical messages, it considers the transmission "valid" and sends a "kiss-off" tone to the Communicator.

If more than one channel has triggered, the triggered channels will report in order of priority (i.e.: low alarm numbers first) unless subsequent channels trigger while one or more channels have commenced transmission. Each channel message must receive "kiss-off" before the next is sent.

**Example:** If Channels A and B of Subscriber 890 go into alarm, the 693 will respond as follows in conjunction with an Ademco 660 or 685 (or Silent Knight, SESCOA, Franklin or DCI) Receiver (alarm codes of 3 for channel A and 6 for channel B are assumed here).

890	3
890	3
"kiss-off"	
890	6
890	6
Final "kiss-off"	(unit hangs up)

If the 693 does not receive the "kiss-off" tone (s) by the time it has sent its message(s) four times, it hangs up and dials again. Up to a total of 8 attempts or "Unlimited Attempts", if so programmed, will be made to reach the central monitoring station via primary and/or secondary programmed telephone numbers. See PROGRAMMING OPTIONS. **Note:** If the Dual Report option is selected, the unit will make up to 8 attempts to reach each telephone number.

6. In the event that "handshake" or "kiss-off" is not received, the 693 hangs up and tries again. If necessary, the unit will make up to a total of 8 attempts (or "Unlimited Attempts" if so programmed) to reach the central monitoring station, via primary and/or secondary telephone numbers (up to 8 attempts to reach each telephone number if the "Dual Report" option is selected). If, after these attempts, the 693 has not made contact and received "kiss-off" it will shut down and stop dialing (unless programmed for "Unlimited Attempts").

## PROGRAMMING OPTIONS

The 693 may be programmed with a number of options which affect its method of sensing alarms and reporting to the central monitoring station. Programming options (except for channel alarm codes) are contained in a PROM Chip (No. 691) which can itself be programmed by Ademco or (with the No. 690 Programmer) by the installer. The PROM Chip is inserted in the 693 during installation using the No. 692 PROM Insertion Tool.

Remove the 693's cover by grasping it at the end with the large wiring opening and pull gently.

### Channel Alarm Codes:

Alarm codes are programmed by positioning four (CHANNEL CODE) flying leads on an 8 pin connector (CHANNEL CODE SELECTOR) block provided on the 693's circuit board. Channel A's code is selected with the BROWN lead, Channel B uses RED, Channel C uses ORANGE and Channel D uses YELLOW.

The numerical value of the code is selected by inserting the tip of each wire in the desired connector position as shown in Diagram 1. As shipped, the channel code leads are positioned for: Code 1 for Channel A (BROWN), Code 2 for Channel B (RED), Code 3 for Channel C (ORANGE), Code 4 for Channel D (YELLOW) but they may be repositioned in any of the 8 holes for different codes as desired. **Note:** All four leads must be inserted, regardless of the number of channels to be used.

### System Programming Options:

See Diagram 2 for a reproduction of the form used in programming the PROM chip. It may be used to record the PROM programming used for the actual installation as well as a guide for requesting a differently programmed PROM.

Some of these options affect the 693 as a whole, while others affect only the desired channel. The options which affect the unit as a whole are:

1. **Dual Report:** Reports all information to the second telephone number after receiving kiss-off from the receiver at the primary number. In the event that 8 attempts are made, but no "kiss-off" is received from the primary number, the 693 will then make 8 more attempts to report to the secondary number.

**Note:** When the Dual Report is used, Unlimited Attempts (System Option 6) should not be programmed.

2. **Alternate by Pairs:** The 693 will attempt to call the primary number twice, then, if "kiss-off" has not been received, it will make two attempts to reach the receiver at the secondary number. It will alternate by pairs of calls until a total of 8 attempts have been completed, or "kiss-off" is received.
3. **Extended Acknowledge Wait:** Doubles the acknowledgment wait period from 30 seconds to 60 seconds. Helpful on phone networks with long switching time.
4. **Extended Dial Tone Wait:** Triples the dial tone period from 11 seconds to 30 seconds. Useful in slow dial tone areas.
5. **Touch Tone Dial:** Instructs the communicator to dial touch tone instead of the slower pulse dial method.
6. **Unlimited Attempts:** Causes the 693 to continue making attempts to reach the receiver until "kiss-off" is received, rather than ceasing after 8 attempts. **Note:** Unlimited Attempts should **not** be programmed when Dual Report (System Option 1) is used.
7. **SESCOA:** Causes the 693 to look for the SESCOA/Franklin/DCI acknowledge and acknowledge hold signals and to report in SESCOA format. If this option is not selected, the 693 will respond in the Ademco standard format. **Note:** In addition to PROM programming, the VIOLET jumper on the 693's circuit board must be cut when this option is selected.

## Channel Programming Options:

In addition to the **system** options, there are a number of options which can be selected which affect only those **channels** which the user desires. These are:

1. **Long Delay Channels:** Any number of channels may be programmed for a 16 second delay. Thus, the normal 150 millisecond response time can be extended to 16 seconds to minimize false triggering due to transients.
2. **Open/Close Channels:** Channels selected as Open/Close Channels will report when the triggering voltage appears as well as when the input voltage is removed.

In order to transmit opening and closing rounds, the 693 must receive signals when the control panel is armed and disarmed. These signals are available directly from the Nos. 1021/4021 and 1023 Alarm Processing Centers or Nos. 1022, 1024, 1025, 1026 and 1028 Alarm Processing Centers when used with the No. 688 Opening/Closing Switching Module. The signal may be applied to the 693 when the control is armed and removed when the control is disarmed, or vice versa.

With the standard Ademco or SESCOA format, when an input is applied to the Open/Close Channel, it will report the 3 digit subscriber identification followed by the alarm code number assigned to the channel.

When the input is removed, an Open/Close Channel will report the subscriber identification followed by an **alarm code 9**. For example, for subscriber No. 890 the unit will report:

```

890          9
890          9
"Kiss-off"  .....hang up

```

If a channel is selected as both an Open/Close Channel and a Delay Channel, the delay applies to the input being applied and the input being removed. Since the channel is not identified upon removal of input, restrict this method to **one** channel.

3. **Restore Channels:** Channels so designated will **not only** report when the input voltage goes high (alarm) but will report again when the input voltage goes low (restore). When the input goes high (alarm) the affected channel will report subscriber identification and alarm code number, to be followed by "kiss-off".

However, when the input goes low, the channel, (if it is selected as a Restore Channel) will report the subscriber identification followed by the alarm code number; **then**, after "kiss-off", the 693 will report the subscriber identification followed by code 9. For example, should a channel with alarm code 4 restore, the message sequence will be:

```

890          4
890          4
"Kiss-off"
890          9
890          9
"Kiss-off"  .....hang up

```

If, in addition to being selected as a Restore Channel, a channel is selected as a Long (16 sec) Delay Channel, the delay applies **only** to the input going high (alarm). If the input goes low (restores), 150 msec delay applies. This feature permits the 693 to report a restore on the same call as it reports an alarm, thus reducing the frequency with which emergency services will be notified in the event of false alarms.

4. **Secondary Number Only Channels:** Any channel or channels may be selected to call and report only to the secondary number. This feature can be used to force openings and closings to call the secondary number, leaving the primary number open for emergency calls, such as fire, holdup, burglary, etc. This channel option takes precedence over the **system** options of "Alternate by Pairs" and "Dual Report".

- 5. Inverted Channels:** Any number of channels may be programmed for inverted operation. This means that the microprocessor will interpret the presence of a voltage on that channel's input terminal as normal (restored). The absence of a voltage will then be treated as abnormal (alarm).

All alarm reporting and timing features described in channel options 1 to 3 (above) still apply, but with the reversed definition of normal and alarm. Inverted operation can be used to obtain triggering upon dry contact opening by connecting the channel input as for dry closure, but substituting a closed circuit switch for the open circuit switch.

The ability to invert a channel also provides features not otherwise easily available. For example, suppose it is desired to send opening and closing information, but code 9 (see Channel Option 2) is found unacceptable. Suppose further that a code 4 is wanted for closing (input going low) and code 5 for opening (input going high). Simply tie the inputs of channels with assigned codes of 4 and 5 together and then to the control unit. Program the "4" channel (input going low) for inverted operation. In this case DO NOT program either the "4" or "5" channel for Open/Close or for Restore. **Note:** 16 sec delay, if selected, will apply when signal is removed from the inverted channel.

Channels with codes of 4 and/or 5 or any other combination used this way may be programmed for Long Delay or Second Number Only (as desired).

## INSTALLATION PROCEDURE:

### Mounting:

The 693 is self-contained in a plastic enclosure. It is provided with a metal clip that may be slipped onto the edge of the control or other cabinet in which it is installed (and secured in place with a screw if desired). Alternatively, double-sided tape may be used to secure the unit to the inside of any enclosure.

**Connections:** (See Diagram 1)

1. **With the 693 unpowered, plug a previously programmed PROM (No. 691, programmed by means of a No. 690 Programmer or No. 691P4, pre-programmed by Ademco) into the socket provided.** See Diagram 1. Care should be taken to orient it properly and avoid bending any pins. For best results, use an Ademco No. 692 PROM Insertion Tool. To remove a PROM, use a No. 692-1 PROM Removal Tool.
2. **Observe the channel code flying leads** and make sure that they are inserted in the 8 pin alarm code selector block in accordance with the "Channel Alarm Codes" section of PROGRAMMING OPTIONS.
3. **Connect the alarm inputs to the appropriate terminals** (terminal 1 is used for Channel A, 2 for B, 3 for C and 4 for D) as follows:
  - a. **DC Signal Triggering:** Connect (+) to terminal 1, 2, 3 or 4 and (-) to terminal 6.
  - b. **Dry Contact Triggering:** Connect contacts between terminal 5 (+) and terminal 1, 2, 3 or 4. For triggering upon contact closure, use an open circuit contact. For triggering by contact opening use a closed circuit contact (in this case, the channel must be programmed for inverted operation).
4. **Connect the telephone line (and handsets) to terminals 7, 9 and 10.** Diagram 1 shows connection via a No. 620 Direct Connect Cord.
5. **Connect terminal 8 to a cold water pipe ground** using #16 (or heavier) gauge wire.
6. **Cut the appropriate jumpers on the 693, if necessary:**
  - a. **If a 6V.DC filtered rechargeable power source is to be used,** leave the unit's GREEN and BLUE jumpers intact.
  - b. **If a 12V.DC filtered rechargeable power source is to be used,** cut the unit's GREEN and BLUE jumpers.
  - c. **If a 6V.DC unfiltered full-wave rectified power source is to be used** cut only the GREEN jumper.
  - d. **If the SESCOA option has been selected,** make sure the VIOLET jumper has been cut.
7. **Apply power to the control unit** (if it is not already powered) if one is to be used in conjunction with the communicator.
8. **Connect the power source to the communicator's terminals 5 (+) and 6 (-)** (make certain that the appropriate BLUE and/or GREEN jumpers have been cut, if necessary...see Step 6). The 693's dial relay and line seizure relay will be activated for about ¼ second and the unit will initialize to the alarm status present at the input terminals. Any changes in the alarm conditions will be monitored by the 693 and those which require that a call be made will activate the unit.
9. **Test the 693** by triggering one of the alarm channels.

## **GENERAL SPECIFICATIONS:**

**Physical:**           Width: 3<sup>7</sup>/<sub>8</sub>" ( 9.8 cm)  
                          Height: 7" (17.8 cm)  
                          Depth: 1<sup>3</sup>/<sub>8</sub>" ( 3.5 cm)

### **Electrical:**

**Power: 6V.DC Filtered Rechargeable Source** (GREEN and BLUE jumpers intact)

or

**12V.DC Filtered Rechargeable Source** (cut GREEN and BLUE jumpers)

or

**6V.DC Unfiltered Full Wave Rectified Source** (cut GREEN jumper only)

**Notes:** Power sources with nickel cadmium batteries may **not** be used, unless they can meet standby current requirements.

See GENERAL INFORMATION for additional information.

**Activating Inputs (Triggering):** Application (or removal) of 4.5 to 12V.DC (battery or filtered full-wave rectified) or dry contact closure (or opening) with DC excitation.

**Current Drain:** Standby (non-activated): 75mA

During call (activated): 160 mA

**Transmission Format:** Accommodates Ademco standard format (and Silent Knight) receivers as well as those of SESCOA, Franklin or DCI.

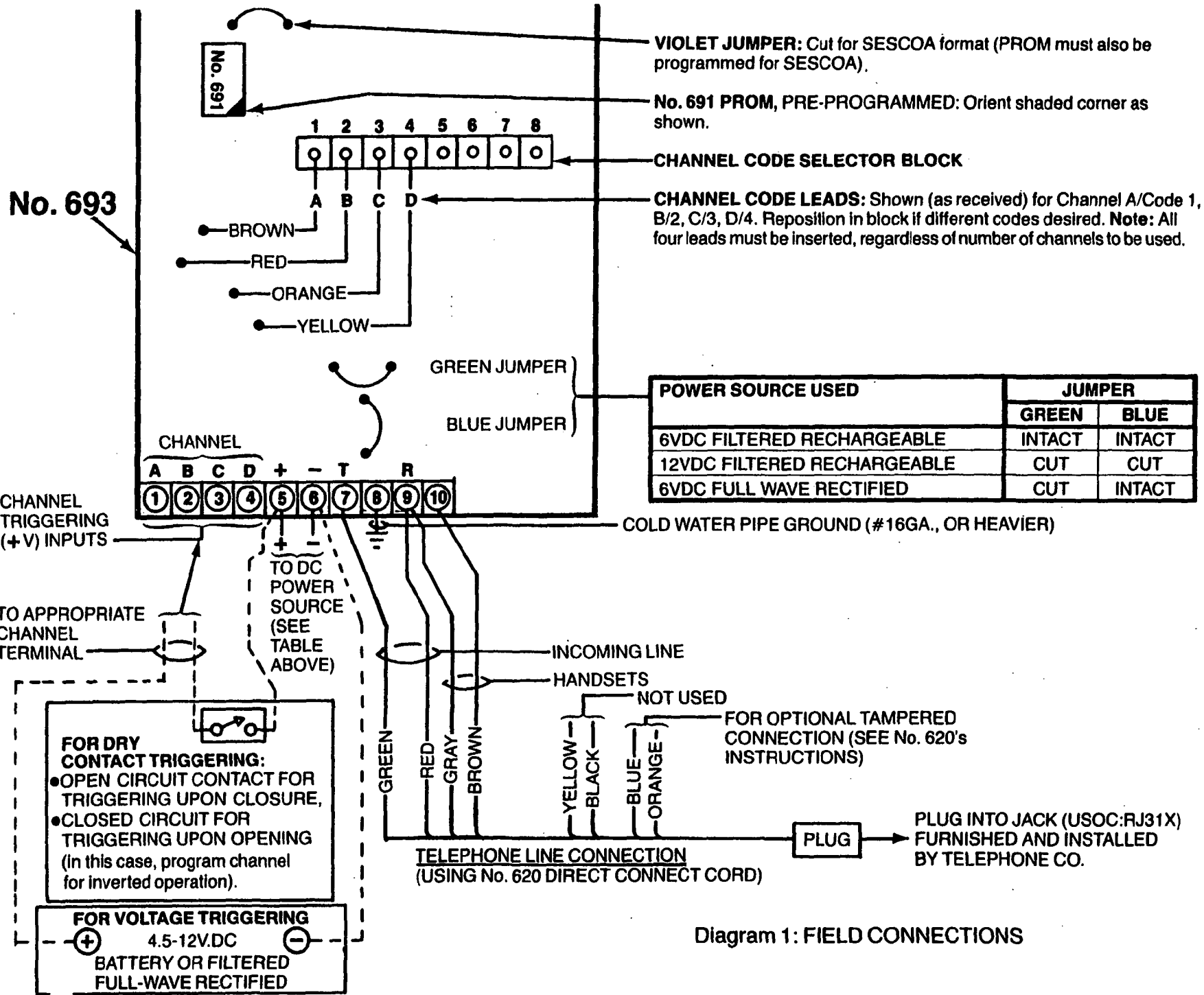


Diagram 1: FIELD CONNECTIONS

This form may be used to record PROM Programming used at actual installation. Follow this format when requesting new programming.

**ACCESS  
(INTERNAL)  
NUMBER**

(If any, such as a "9" for PBX systems)

**MAIN  
(TELEPHONE CO.)  
NUMBER**

Fill in: Prefix (usually a "1" in areas requiring it), Area Code, Exchange and Line, as required.

1. PRIMARY TELEPHONE NO.:

first

first

2. SECONDARY TELEPHONE NO.:

first

first

Blank space(s) can be left at end of each section.  
Do not leave spaces between digits.

3. SUBSCRIBER IDENTIFICATION NO.:

0

Fill in last 3 spaces (the initial "0" will not be transmitted).

4. SYSTEM OPTIONS: Check appropriate space(s).

Don't use with each other

Not used

DUAL REPORT

ALTERNATE BY PAIRS

EXTENDED ACKNOWLEDGE WAIT

EXTENDED DIAL TONE WAIT

TOUCH TONE DIAL

UNLIMITED ATTEMPTS

SESCOIA FORMAT (FRANKLIN, DCI)

5. CHANNEL OPTIONS: Check appropriate spaces below each selected channel code.

OPTION	CHANNEL CODE No.	1	2	3	4	5	6	7	8
INVERTED									
LONG (16 SEC) DELAY									
SECONDARY NO. ONLY									
OPEN/CLOSE									
RESTORE									

Restrict OPEN/CLOSE to single channel.  
Do not select both for same channel.

Diagram 2: PROGRAMMING FORM for No. 691 PROM (used with No. 693 Four Channel Digital Communicator)

ADDENDUM TO: **INSTALLATION INSTRUCTIONS**  
**for**  
**No. 693 4 CHANNEL DIGITAL COMMUNICATOR**

RE: **PROGRAMMING UNASSIGNED CHANNEL CODE POSITIONS**  
**FOR INVERTED OPERATION**

**I M P O R T A N T !**

It is recommended that the four CHANNEL CODE number positions not assigned to any channel be PROM programmed for INVERTED operation. Failure to do so may result in either transmission of spurious codes (in the presence of bell noise), or failure to operate altogether (recoverable by powering down and repowering).

**ADEMCO**

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