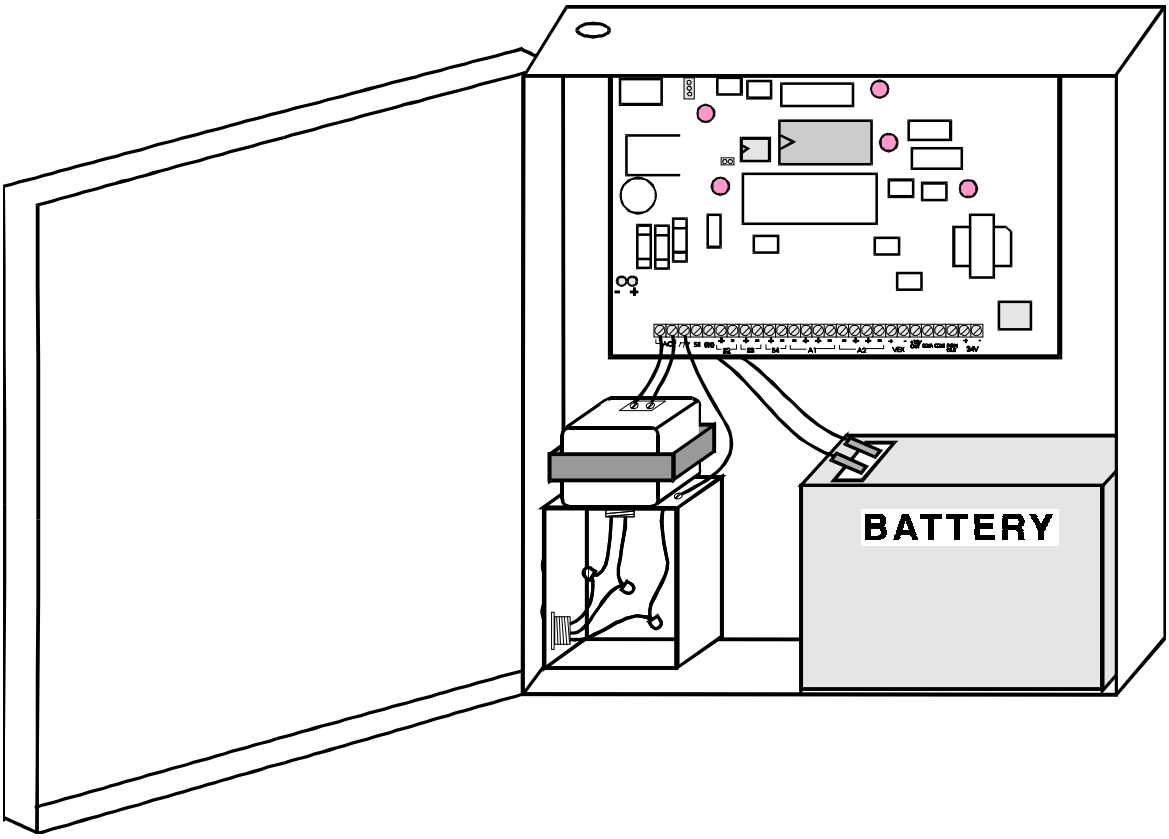


The Sur-Gard model SG-DV4420 is a combination of Fire control panel and SCHED-3A communicator. This fire transmitter consists of six channels: Two class-A alarms A1 and A2, one End of line resistor supervisory input S1, and three closed loop supervisory S2, S3 and S4. There is also one programmable output, an AC fail, and a low battery detector. The SG-DV4420 can transmit up to ten codes to the MLR2 receiver at the central station. It includes the 12V power supply/battery charger and the 24V power supply for the F1/F2 modem. The standby power is obtained from a 12V battery.

The EEPROM programming is done easily and quickly by using the SUR-GARD SG-DVT1 SCHED-3A tester. It is only necessary to enter the account ID and options needed. Other data such as the function bytes, delays, etc. can be modified to meet different operating conditions.

STAND-ALONE MODE

SG-DV4420B mounted in Multi 2XF metal cabinet with built-in 115 to 14VAC transformer, meeting ULC requirements as a Stand-Alone fire/sprinkler transmitter.

SYSTEM OVERVIEW

The SG-DV4420 is intended for use as a fire transmitter only, for connection to a sprinkler riser or to output relay contacts of an existing fire alarm control panel. This unit does not include U.L.C. requirements for a complete building fire alarm system such as multi-zone with alarm and trouble indicators.

INPUTS

- 2 Class A zones
- 1 ELR supervisory zon
- 3 Normally closed Supervisory zones

OUTPUTS

- Power supply Vaux 12V at 250mA w/15 Ah battery 24V at 50mA output to power modem
- Operation controlled through program options
- 1 Programmable output PGM 1: Switched to ground with current limiting resistor

ELECTRICAL SPECIFICATIONS

MAXIMUM LOOP RESISTANCE PER CONDUCTOR
Class-A loops
A1, A2 – 100 ohms

Supervisory loops
S1 – 2700 ohms ELR +/- up to250 ohms

S2,S3,S4 – 500 ohms.

Eprom part number: Type 27C256.

Nominal current draw: 260mA with fully charged battery and F1/F2 subset powered.

Battery Required: 6.5 Amp hr minimum to 15 Amp hr rechargeable gel-cell or sealed lead-acid battery mounted in panel.

TRANSFORMER
Built-in, 16,5 Vac, 37VA Class 2 Transformer.

Dimensions: 29cm(W) x 35.5cm(H) x 12.5cm(D)

Weight: 3.7Kg

FEATURES

POWER SUPPLY

The SG-DV4420 has a built-in 12VDC to 24VDC regulated converter power supply, to operate the F1F2 subset modem, a one Amp 12VDC power supply and battery charger. The auxiliary power supply can be used to power smoke detectors and other devices requiring 12VDC. 800mA 12VDC is available from the AUX (positive) and GND (negative) terminals. It also includes AC failure and low battery detector.

EEPROM NON-VOLATILE MEMORY

The EEPROM non-volatile memory is used to store the programmable data needed for each installation such as the ID code, the all call response, etc...

SERIAL OUTPUT

The serial output to the F1F2 subset modem is on a 6 position modular jack. A 6 foot modular cable is supplied with the unit.

LOW BATTERY DETECTION

When the battery voltage falls below about 11V, this internal circuit will be activated and the programmed low battery code will be transmitted to the central station.

WATCH DOG CIRCUIT

The Watch Dog reset circuit continously monitors the operation of the microprocessor. If a malfunction occurs (due to lightning or other unusual event) this circuit will restart the microprocessor in less than 10 seconds.

LOW BATTERY DISCONNECT CIRCUIT (NOT ON BOARD ONLY VERSION)

If the battery voltage fall below about 10.5V, the system will electrically disconnect the battery to prevent it from being deep discharged. The system remains disconnected from the battery until the AC power comes back ON or until the dead battery is replaced with a sufficiently charged battery.

CLASS A FIRE ZONES: “A1” & “A2”

The Fire zones A1 and A2 are supervised (normally open alarm initiating contacts) Class A circuits designed to accept sprinkler switches, manual pull stations, building fire alarm control panel, alarm output relay contacts or latching four-wire smoke detectors.

Circuit A1 has an “retard” activation delay. On alarm, (fire loop shorted) once the activation delay has expired, the alarm is transmitted to the central station. The “retard” activation delay is programmed at location 21. If the fire input A1 returns to normal or swings before the activation delay has expired, there will be no transmitted alarm. This activation delay feature makes it possible to use vane type waterflow switches without false alarms from pressure surges. There is also a restore delay time programmable at location 22, to avoid nuisance repeat alarms.

The A1/A2 Class A Fire/Sprinkler circuits must have one closed loop between its two + terminals and another between its two - terminals. Opening one of those loops will cause a fire trouble and shorting across the loops will cause a fire alarm.

SUPERVISORY INPUTS:"S1","S2","S3",& "S4"

There are four supervisory circuits provided, which may be used to monitor other parameters such as main valve and\or pressure. The first supervisory loop, S1, is an End of Line Resistor loop. The supervisory loop S1 must have a 2.7K end of line resistor.This is not a Class B fire circuit, since either a short or an open circuit condition causes the same supervisory signal.The supervisory loops S2, S3 and S4, are used for normally closed switch contacts.

PROGRAMMABLE OUTPUT: "PGM OUT"

The SG-DV4420 has one programmable output, switching to negative, with a 150 ohm 1W current limiting resistor. A sensitive relay (with a coil resistance of 700 ohms or more), a buzzer, a LED or compatible DC operated device may be connected between the AUX (positive) terminal and the PGM OUT (switched negative) terminal on the main board. Typical uses are: control relay, alarm on A1 and/or A2 indicator, line trouble warning indicator, or "Ring Back" (call received confirmation).

The operation of the Programmable Output depends upon which option is selected in the programming table. See the Programming Guide for a list of programmable operation possibilities programmed at Location 27. The programmable output can also be controlled remotely from the receiver.

SELECTION JUMPERS

The program selection jumper must be left open.

ON BOARD LED INDICATORS (SEE FIG. #1)

WATCH-DOG: Flashes once every 10 seconds to show unit is functioning normally. Any other flashing period indicates a malfunction in the unit.

TX LINE: Flashes when unit transmits data.

RX LINE: Flashes following incoming data.

A1 FIRE/TROUBLE: Light ON when zone A1 in alarm or in trouble.

A2 FIRE/TROUBLE: Light ON when zone A2 in alarm or in trouble.

SOFTWARE SPECIAL FEATURES

EASE OF PROGRAMMING

The system ID code and other programmable parameters will be downloaded into the module EEPROM by using the SG-DVT1 Tester (with program version 5.0 or later) as an access terminal. The SG-DVT1 is plugged into the SCHED-3A line modular socket.

SELECTION OF TRANSMISSION

It is possible to select, for each zone, no transmission, alarm transmission only or alarm and restore transmissions.

ACTIVATION AND RESTORE DELAYS

The loop A1, Low Battery detect and the AC fail detect have programmable activation and restore delays to reduce false alarms and nuisance troubles.

BELL OUTPUT FUNCTION ON PROG. OUTPUT #1

The PGM OUT can be activated by alarm on A1 only, A2 only or both. It has a 17 minute autoreset.

LINE TROUBLE WARNING

If the transmission line were cut; the unit would give a 2 seconds pulse to the PGM OUT output after a programmable delay of 60 sec. or 120 sec.

BENCH TESTING

The SG-DV4420 contains factory default programming. Any additional programming required is done through the SG-DVT1 tester. For many applications all that will be required is to enter the ID number. If you need help, talk to your Sur-Gard distributor.

Program the SG-DV4420 using the SG-DVT1 Tester (with program version 5.0 or later) as an access terminal. The SG-DVT1 is plugged into the SCHED-3A line modular jack. The program select jumper J2 should be removed from the SG-DV4420 circuit board.

Connect a 2.7K end of line resistor between the S1 input terminal and the GND terminal. Connect a jumper on each normaly closed supervisory zone S2, S3 and S4 input. Connect 2 loops to the A1 and A2 Sprinkler/fire class A input terminals - out to - in , and + out to + in. To completely test your Fire system including the communicator data, it is necessary to connect the unit to a test set, such as the SG-DVT1 (see system testing procedure).

Connect a 14Vac, 20VA transformer to the AC terminals. Before plugging in the transformer, be sure the circuit board is not resting on anything metallic which may cause a short.

NOTE: The SG-DV4420 will not start up if AC is OFF and the battery is low.

MOUNTING THE PANEL

Select a dry location, close to an unswitched AC source, close to a ground connection, and close to the F1/F2 subset (modem) location.

Remove the printed circuit board and mounting hardware from the cardboard retainer inside the panel. Before attaching the cabinet to the wall, press the five white nylon printed circuit board mounting studs and the ground connection screw into the cabinet from the back.

Pull all the cables into the cabinet and prepare them for connection before mounting the circuit board to the back of the cabinet. Press the circuit board down onto the mounting studs.

With power off, wire the DV4420 as shown on fig. #1. All normally closed (N/C) loops require a jumper if not used. The connections to the F1/F2 subset are shown on fig. #2. Avoid running the cable close to noise generators like power transformer, motor, fluorescent tube, etc...

HOOK-UP PROCEDURE

DO NOT connect the transformer or battery until all other wiring has been connected (See power-up procedure).

Connect a ground cable from the cabinet ground connection by the shortest and most direct route to a grounding rod and to the Earth Ground Terminal on the panel.

Connect zone cables to zone loop inputs and put jumpers or end of line resistors as required on any unused zones. Connect wires supplying power to detectors to the auxiliary supply. Make sure that the PC board is clear of wire running close to it, to avoid electrical noise causing disturbance to the components.

You can use up to 5 SG-DV4420 on 1 F1/F2 subset provided they are in the same location or 1 SG-DV4420 and 1 other subscribers control such as SG-DV1660, by using the SUR- GARD SG-DS1 module (Y connector). You have to connect together the 24V negative terminals of both units, separate the ID codes and program a different all call select for each one.

F1/F2 SUBSET

1. Remove power to the F1/F2 subset by unplugging the A.C. adaptor from the 120 VAC outlet (if installed). Do not remove the plug from the “Adapt" input of the F1/F2 subset while the adaptor is powered as it may cause an arc at the input and damage the F1/F2 subset.

2. If the telephone company installed a cable on the "Terminal" input of the F1/F2 subset, disconnect it and connect the 6 pin modular cable MCBL6 (6 ft.) included with the SG-DV4420. Then connect the cable to the SG-DV4420 Fire Transmitter. A custom length 6 pin modular cable(MCBL-C) is also available on special order from Sur-Gard. The custom cable is available in any length up to the maximum run length of 50 feet. See the "F1/F2 Subset Connections" diagram on page 10.

3. The F1/F2 subset should be installed close to the control panel. However, if it is impossible, follow these precautions:

   - Avoid cable runs close to noise generators like power transformer, motor, fluorescent tube, etc...

   - If you can’t avoid this, or the F1/F2 subset is too far from the control panel, it is necessary to use low capacitance shielded cable to connect the F1/F2 subset to the control panel.

RECOMMENDED MAXIMUM WIRE RUN

The RS-232 communication (Rx & Tx) has a recommended maximum wire run of 50 feet, using Sur-Gard's 6 pin modular cable.

The power supply (24Vdc) has a recommended maximum wire run of 100 feet using:

- #18 awg unshielded 4 conductor cable

- #22 or #24 awg unshielded 4 conductor cable with 2 wires connected in parallel for each of the 24V$_{DC}$ Connections.

FOR LONGER DISTANCES

For RS-232 communication distances greater than 50 feet, shielded cable with Sur-Gard's SG-DS1 connectors at each end must be used. One SG-DS1 has to be installed inside the Fire Transmitter cabinet and another one inside the F1/F2 subset box, (see Appendix B for theSG-DS1 wiring diagrams). The maximum distance maybe extended by using a shielded cable such as those described below.

A. For 50 feet to 100 feet

- Use #18 awg shielded 4 conductor cable such as Provo (Cat. Num. 1782-21) or Belden (Cat. Num. 9814).
- #22 or #24 awg shielded 4 conductor cable.

B. For 100 feet to 500 feet

Use Low Capacitance #24 awg shielded 4 conductor cable such as ALCATEL (Cat. Num. 371-02-24), Provo (Cat. Num. 6652-21), or Belden (Cat. Num. 9927) for the RS-232 communication (Rx, Tx, and SG).

You must also use a 24Vdc power supply (such as Sur-Gard's SG-2415 24Vdc power supply) close to the F1/F2 Subset to power it. Make sure to run a wire (#18 or two #24 awg wires in parallel) between the negative 24Vdc terminal of the Fire Transmitter and the power supply, so that they are connected together.

POWER-UP PROCEDURE

Before applying power to the SG-DV4420 or the F1/F2 subset, connect the 24V output to the "Batt" input of the F1/F2 subset.

Connect the tansformer, wait approx. 5 seconds. Check that A1 and A2 loop status led lights are off and the green "A.C. POWER" led is on. If a led(s) does not turn off, find the cause (such as loop open or shorted) and correct it. If the "A.C. POWER LED" is off, find the cause (such as breaker turned off) and correct it.

NOTE: To supply AC power to the SG-DV4420, the transformer should not be connected to an outlet that is controlled by a switch.

Check for the WATCH-DOG led pulses. This led indicator flashes once every 10 seconds to show unit is functioning normally. Activate a zone to be sure that the panel is responding to signals. If the panel does not respond and there are no indicators on, check that the wiring is correct. If the panel is responding normally, connect the battery. The red battery lead attaches to the positive battery post and the black battery lead attaches to the negative battery post.

SYSTEM TESTING

First test the system thoroughly using an SG-DVT1 tester. Contact the monitoring station to request a transmission test before connecting the 6 pin modular cable to the modem. Trip an alarm on any loop. Wait for the communication to complete and check with the monitoring station to confirm the transmission. You can use the Rx/Tx Led indicator to see if the transmitter receives or transmits. Perform additional transmissions required by the monitoring station.

The system should be tested on batteries only and AC only, to be sure that both supplies are present and adequate. Make sure that the AC Power to the unit is connected to a separate, well marked, circuit breaker which will not be turned off by accident.

If the transmitter is not communicating (no signal on Rx led of transmitter) to the central station at this point, call the telephone Company and ask them to make sure that the "Leg" is on. The telephone company will ask you for the circuit number and the leg number which can be found along with the service telephone number on a card fixed on the F1/F2 subset.

REQUIREMENTS FOR ULC INSTALLATION APPROVAL

- All components used in the system (contacts, detectors, etc...) must be ULC listed.
- Wire the transformer to the A.C. line according to the electrical code on a separate circuit breaker.
- The F1/F2 subset should be placed in a metal box, (for example the SUR-GARD SG-UMBX1) close to the control panel.
- The battery must have a minimum ampere hour capacity of 6.5AH. In case of long time power failure, the control panel must function normally for 24hrs.

NOTE: Refer to ULC Standard booklet "FIRE ALARM CERTIFICATE SERVICE OF UNDEWRITER'S LABORATORIES OF CANADA". You can contact ULC at Toronto for more information or to obtain the booklet.

CONTROL POINT INFORMATION

Control point #1: programmable output PGM OUT

The control point #1 can be activated remotely from the receiver. This is done by sending a command containing the subscriber unit ID, which identifies to which unit the command message is addressed and the point ID which identifies the control point.

Point ID bytes are split into 2 digits. The first digit specifies the type of command and the second digit indicates which control point is to execute the command (on the DV4420, the control point is always #1). The point ID byte start with a letter from A to D, giving the desired output function, as follows:

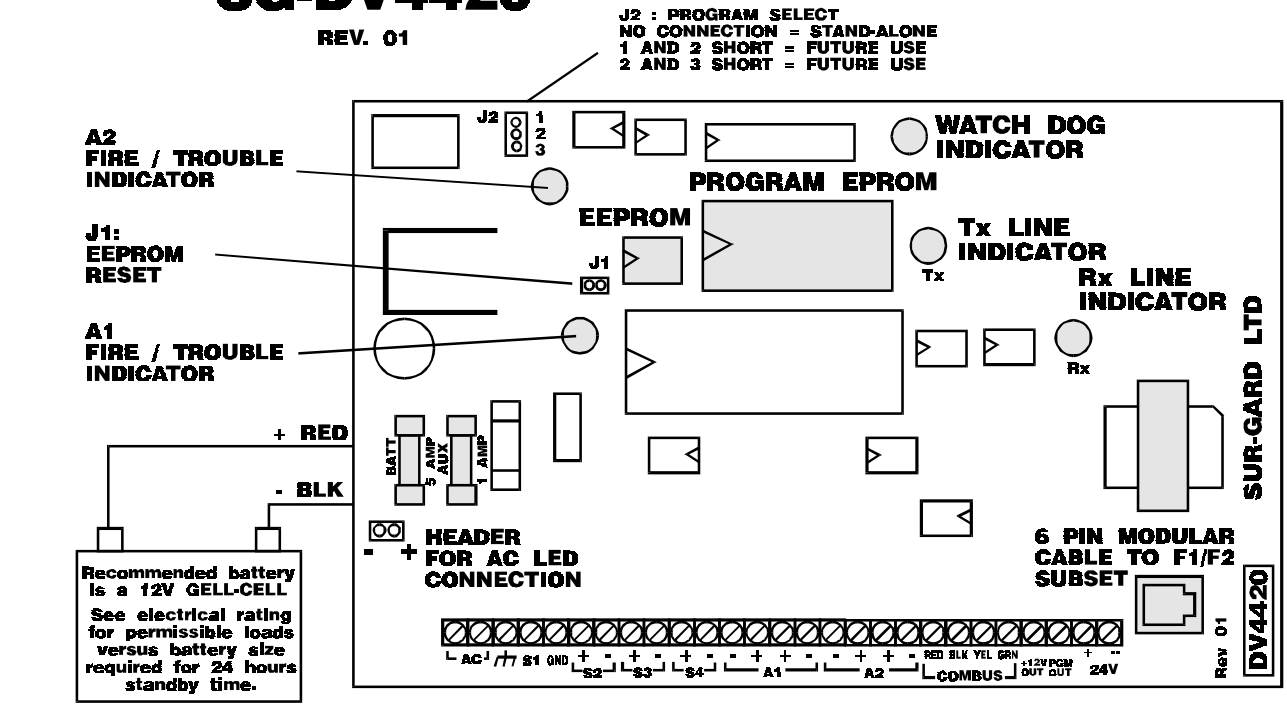
A. Turn On the specified point.
B. Turn Off the specified point (stop).
C. Turn On for 2 seconds (Pulse) the specified point.
D. Flash the specified point, 2 seconds On, 2 Seconds Off, until a command is received to stop (B).

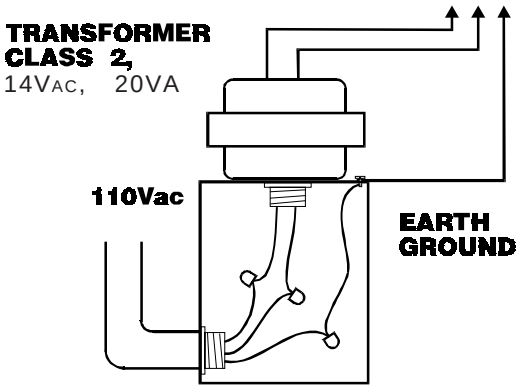
When a new command is received, for the programmable output (control point #1), it replaces the command previously in effect, if any.

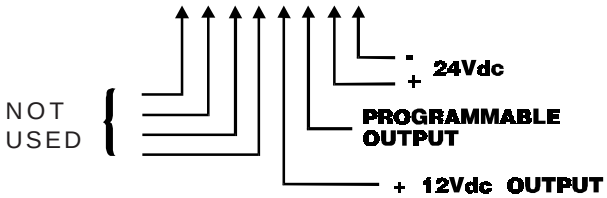
Control point #1 can be activated internally (locally) by the unit, for an "on time" of 2 seconds, when the SG-DV4420 receives the "Kiss OFF" character from the receiver. The "Kiss Off" character is sent by the receiver as a confirmation signal that the last change of status message from the SG-DV4420 was correctly received. This output command takes priority over any command that output point was already executing.

SG-DV4420

REV. 01



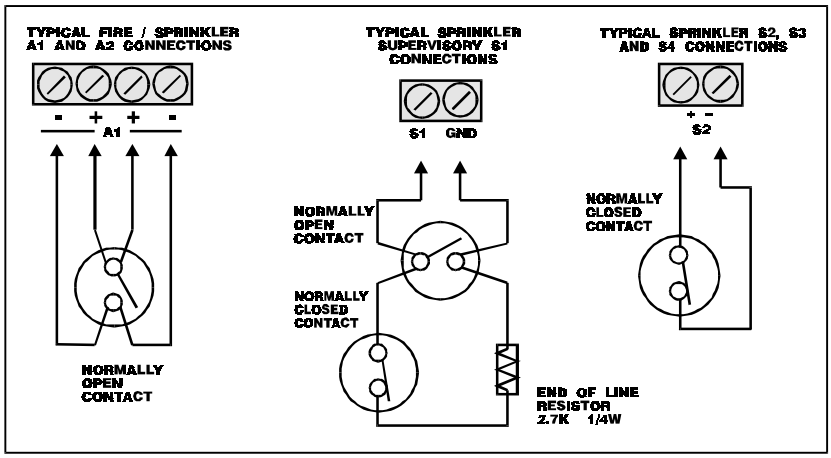




ELECTRICAL RATINGS

POWER SUPPLY
14VAC, **60HZ, 2,25 AMP MAX.**
REGULATED POWER OUTPUT: 13,7Vdc
250 mA WITH 15 AMP HR BATTERY
210 mA WITH 12 AMP HR BATTERY
110 mA WITH 9,5 AMP HR BATTERY
50 mA WITH 8,0 AMP HR BATTERY
0 mA WITH 6,5 AMP HR BATTERY

ZONE CONNECTIONS



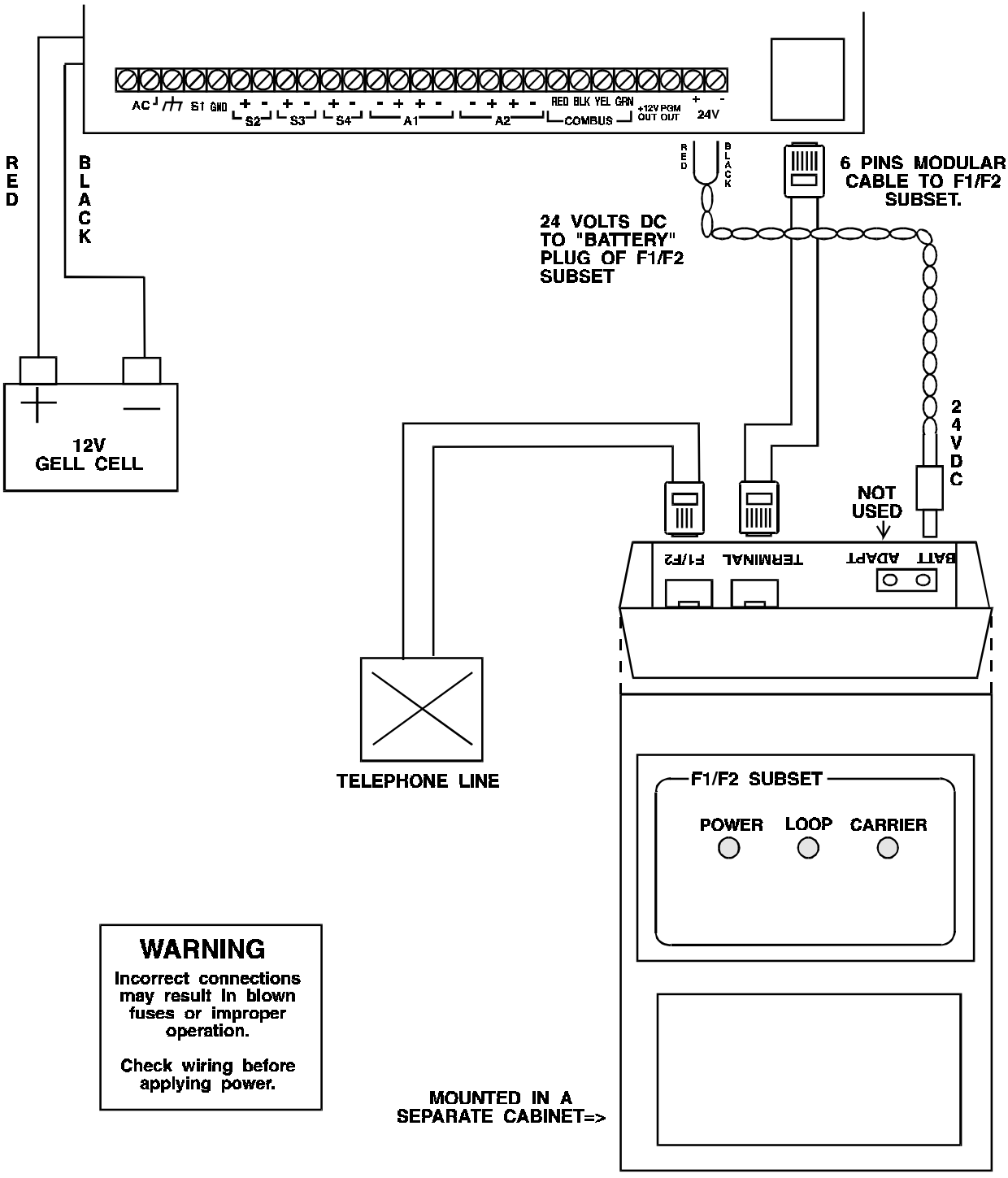
WARNING

Incorrect connections may result in blown fuses or improper operation

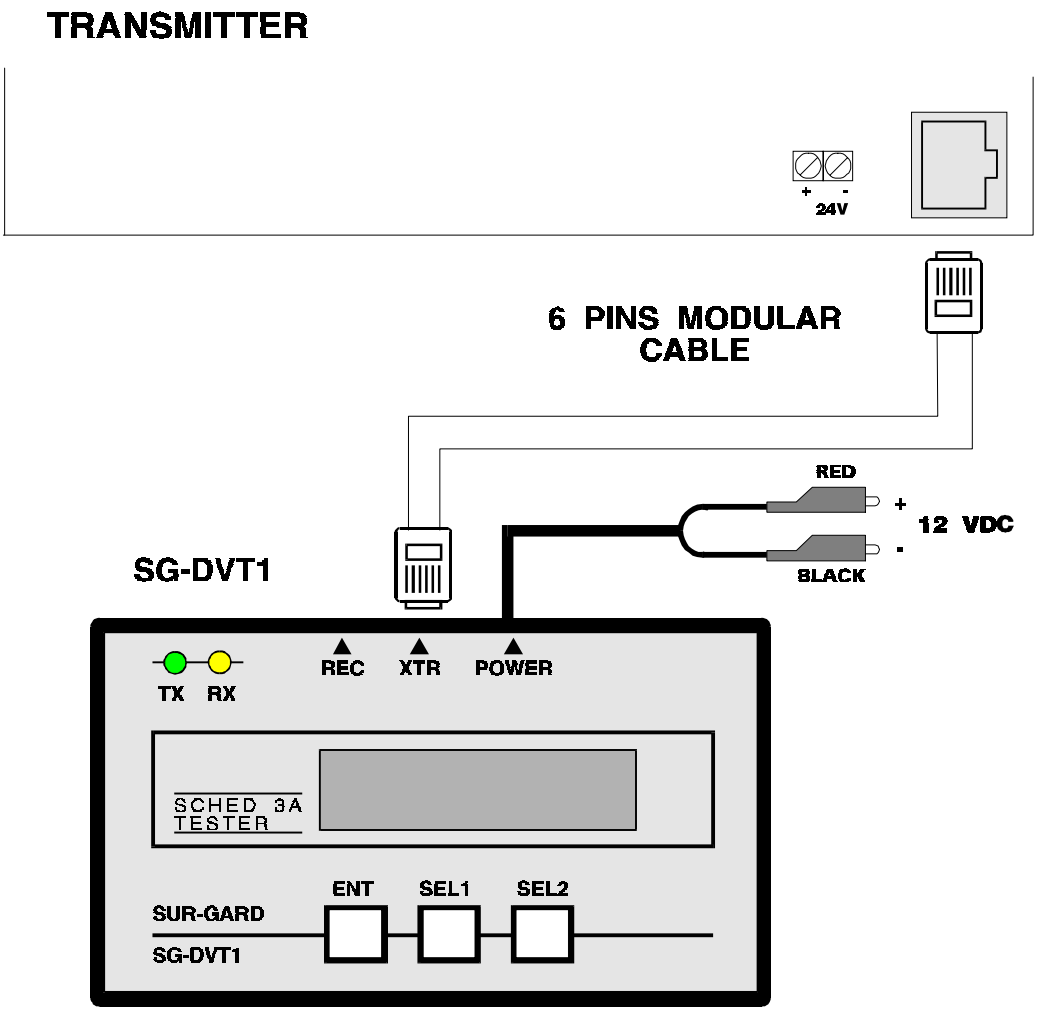
Check wiring before applying power

F1/F2 SUBSET CONNECTIONS DIAGRAM

FIGURE #2



SG-DV4420 TO SG-DVT1 CONNECTION DIAGRAM



The SG-DV4420 has it's own EEPROM which is used to keep in memory all the installer programming and that won't erase in case of power failure.

All programming must be done according to the standards and requirements of the central station to which this equipment is connected, and according to the restrictions of Underwriters' Laboratories of Canada, if applicable.

The system ID code and other programmable parameters can be changed in the EEPROM by using the SG-DVT1 Tester (with program version 5.0 or later) as an access terminal. The SG-DVT1 is plugged into the SCHED-3A line modular socket. The program select jumper J2 should be temporarily removed.

TRANSFER OF DEFAULTS TO THE EEPROM

(Hardware Reset of EEPROM to Factory Defaults). Use the following procedure:

1. Power down the SG-DV4420 by removing both AC and battery power.
2. Using a Plug-In jumper borrowed from J2, short pins marked EEPROM RESET J1 together.
3. Power up the SG-DV4420 and wait approx. 5 seconds.
4. Remove the Plug-In jumper.

PROGRAMMING WITH THE SG-DVT1

Connect a SG-DVT1 (version 5.0 or more) to the SG-DV4420 (see figure #3). Unplug the modular cable connected to modem and connect it to SG-DVT1 transmitter jack (XTR).

Power up the SG-DVT1 Tester by connecting it to the control panel battery using the two alligator clip (make sure to respect the right polarities).

At the power up the SG-DVT1 display shows:

```
SELECT  MODE  V5.0
NOW:  SCAN  MODE
```

ENT **SEL1** SEL2

Select the "PROG MODE" on the SG-DVT1 by Pressing **[SEL1]** twice. The SG-DVT1 screen should be as follows:

```
SELECT  MODE  V5.0
NOW:  PROG  MODE
```

START PROGRAMMER MODE

Press **[ENT]** to start the programmer mode. The SG-DVT1 will initiate the handshake with the SG-DV4420.

```
SELECT  MODE  V6.0
NOW:  PROG  MODE
```

ENT SEL1 SEL2

When the connection is established the SG-DV4420 will identify itself on the display as follows:

```
PROGRAMMING  MODE
CONNECTING...
```

and

```
 SG-DV4420  V1.0
...  CONNECTED
```

At this point the connection is complete and the SG-DV4420 is ready to accept programming commands from the SG-DVT1. The SG-DVT1 is in programmer mode and will prompt you with the following message:

```
Prog.  all  data  ?
YES   NO   EXIT
```

ENT SEL1 SEL2

At this message you can select if all data needs to be programmed (press **[ENT]** to go in the programming all data mode) or just selected few (press **[SEL1]** to go in the programming selected data mode). You may also select EXIT option to quit programmer mode by pressing the **[SEL2]** button.

PROGRAMMING ALL DATA MODE

Press **[ENT]** to programm all data.

```
Prog.  all  data  ?
YES   NO   EXIT
```

ENT SEL1 SEL2

When **[ENT]** is pressed to select YES, the SG-DV4420 will ask if you want to reset all data to defaults with the following message:

```
Reset  ALL  Data  ?
NO   YES   EXIT
```

ENT SEL1 SEL2

Press **[ENT]** if reset to defaults is not required or press **[SEL1]** to reset data to defaults. You may also select EXIT option to return to the programmer mode by pressing the **[SEL2]** key.

If you press **[SEL1]**, then the SG-DV4420 will prompt you to go ahead with reset to factory defaults with the following message:

```
ARE  YOU  SURE  ?
NO   YES   EXIT
```

ENT SEL1 SEL2

Press **[SEL1]** to confirm or press **[ENT]** or **[SEL2]** to abort the operation. If you press **[ENT]**, the SG-DV4420 will go to the Programming All Data Mode. If you press **[SEL2]**, the SG-DV4420 will return to the programmer mode. If **[SEL1]** is pressed, the SG-DV4420 will prompt you with the following message if the operation was aborted:

```
 Writing  Factory
 Defaults,  Wait
```

and

```
 Writing  COMPLETE
```

```
S1=DIG1  S2=DIG2
ADDR=00  DATA=01
```

At this screen the cursor will be flashing at data digit 2. Press **[SEL1]** to increment the first digit of data or press **[SEL2]** to increment the second digit of data. Once the desired data value is reached press **[ENT]** to accept the change in data value. The SG-DV4420 will refresh the display for the next address. The SG-DVT1 will display "continue programming ?" prompt if no data is changed for two consecutive addresses.

```
Continue  Prog.  ?
YES    REDO    EXIT
```

ENT SEL1 SEL2

Press **[SEL1]** to redo the last address or press **[ENT]** to continue with the next address. You may also select EXIT option to return to the tester mode by pressing the **[SEL2]** key.

PROGRAMMING SELECTED DATA MODE

```
Prog.  all  data  ?
YES    NO    EXIT
```

ENT SEL1 SEL2

If you select "NO" by pressing **[SEL1]** at this prompt, the SG-DV4420 will allow you to select an address:

```
SELECT  ADDRESS:
ADDR=00
```

At this screen the cursor will be flashing at address digit 2. Change the address to the desired address by pressing **[SEL1]** to increment the first digit of address or **[SEL2]** to increment the second digit of address. Once the address is selected, press **[ENT]** and the current data at that address will show:

```
SELECT  ADDRESS:
ADDR=00  DATA=01
```

The flashing cursor will indicate that you can change the data now. Change the data to the desired data by pressing **[SEL1]** to increment the first digit of data or **[SEL2]** to increment the second digit of data. Once the desired address value is reached, press **[ENT]** for the SG-DV4420 to accept the change in address value. The SG-DV4420 will refresh the display for the next address.

If no address or data is changed for two consecutive addresses then the SG-DVT1 will prompt you if to continue programming as follows:

```
Continue  Prog.  ?
YES    REDO    EXIT
```

ENT SEL1 SEL2

Press **[SEL1]** to redo the last address or press **[ENT]** to continue with the next address. You may also select EXIT option to return to the programmer mode by pressing the **[SEL2]** key.

EXIT PROGRAMMER MODE

To exit programmer mode, select EXIT from continue message from PROGRAMMING ALL DATA mode or PROGRAMMING SELECTED DATA mode and then select EXIT from programming all data prompt by pressing the **[SEL2]** key.

```
Prog.  all  data  ?
YES    NO    EXIT
```

ENT SEL1 **SEL2**

The SG-DV4420 will prompt as follows:

```
PROGRAMMING  MODE
ENDED!  BYE...
```

This concludes the SG-DV4420 programming.

NOTE: All data shown are generally in Decimal Values (Except for alarm/restore codes which may be in Hex value). The locations are in Hex value.

LOCATION

[00] IDENTIFICATION CODE

You may change the account identification code by entering a two digit number in hex. (DEFAULT 01).

[01] OPTION 1 - ALL CALL SELECT

An "All Call" is a command sent by the central station's receiver after each scanning of 8 identification codes. If a transmitter has an alarm at this moment, it can be sent immediately to the central station, if the unit is programmed to respond to that "All Call". With this feature, it is usually not necessery for that transmitter to wait for its turn to be polled, before it is able to send an alarm to the central station.

00 = NO RESPONSE ON ALL CALL,

01 = RESPONSE ON ALL CALL #1 ONLY,

02 = RESPONSE ON ALL CALL #2 ONLY,

03 = RESPONSE ON BOTH ALL CALLS (#1 AND #2).

04 = RESPONSE ON ALL CALL #1 IF ID CODE IS ODD AND ON ALL CALL #2 IF ID CODE IS EVEN.

NOTE: A number programmed higher than 04 gives the same selection as 04. When 2 transmitters are used on the same F1F2 subset, each must have a different All Call. (DEFAULT 04).

Example of receiver scanning

01-02-03..08-ALL CALL #1-09-0A-0B..10-ALL CALL #2-..

It is recommended that just 1 All Call be selected, and the choice of All Call be divided evenly over the installations. In this way, approximately an equal number of subscribers will be programmed for All Calls #1 and #2.

If two units are connected on the same modem (F1F2 subset): Skip at least 2 codes between your 2 identification codes. (ex: #01,#04 so that 02 and 03 are used at other locations.) Each unit should have a different All Call selected. So with automatic all call selection, you should have an odd and an even identification code. No response on All Call should be used for lower security installations, and when more than two units are connected to one modem - for the 3rd and additional units.

[02] OPTION 2 - ALL CALL ANSWER SELECT

00 = ALL CALL ANSWER ON ALARM AND RESTORE.

01 = ALL CALL ANSWER ON ALARM ONLY.

The unit can send an alarm and a restore on All Call, but it is possible and preferable to limit it to sending only the alarms and wait for the polling of its account code before sending the restores. (DEFAULT 01).

[03] TO [0C] TRANSMISSION SELECT

It is possible to select, for each zone, no transmission, alarm transmission only or alarm and restore transmission. This feature provides for by-passing zones you don't want transmitted to the receiver.

00 = NO TRANSMISSION.

01 = TRANSMISSION OF ALARM ONLY.

02 = TRANSMISSION OF ALARM AND RESTORE

		DEFAULT
[03]	Transmission Select for FIRE INPUT A1	02
[04]	Transmission Select for FIRE TROUBLE A1	02
[05]	Transmission Select for FIRE INPUT A2	02
[06]	Transmission Select for FIRE TROUBLE A2	02
[07]	Transmission Select for SUPERVISORY S1	02
[08]	Transmission Select for SUPERVISORY S2	02
[09]	Transmission Select for SUPERVISORY S3	02
[0A]	Transmission Select for SUPERVISORY S4	02
[0B]	Transmission Select for LOW BATT. DETECT	02
[0C]	Transmission Select for AC FAIL DETECT	02

[0D] TO [16] ZONE ASSIGNMENT

This feature permits each zone to be assigned to the zone number desired, taking full advantage of the receiver line card decoding.

		DEFAULT
[0D]	Zone Assignment for FIRE INPUT A1	01
[0E]	Zone Assignment for FIRE TROUBLE A1	02
[0F]	Zone Assignment for FIRE INPUT A2	03
[10]	Zone Assignment for FIRE TROUBLE A2	04
[11]	Zone Assignment for SUPERVISORY S1	05
[12]	Zone Assignment for SUPERVISORY S2	06
[13]	Zone Assignment for SUPERVISORY S3	07
[14]	Zone Assignment for SUPERVISORY S4	08
[15]	Zone Assignment for LOW BATT. DETECT	01
[16]	Zone Assignment for AC FAIL DETECT	02

[17] TO [20] FUNCTION BYTE

This feature permits each zone to be assigned to the zone description desired, taking full advantage of the receiver line card decoding for central station without automation.

		DEFAULT
[17]	Function Byte for FIRE INPUT A1	50
[18]	Function Byte for FIRE TROUBLE A1	50
[19]	Function Byte for FIRE INPUT A2	50
[1A]	Function Byte for FIRE TROUBLE A2	50
[1B]	Function Byte for SUPERVISORY S1	50
[1C]	Function Byte for SUPERVISORY S2	50
[1D]	Function Byte for SUPERVISORY S3	50
[1E]	Function Byte for SUPERVISORY S4	50
[1F]	Function Byte for LOW BATT. DETECT	51
[20]	Function Byte for AC FAIL DETECT	51

NOTE: For a listing of all function byte possibilities, refer to "Line Card DVACS* Alarm Decoder Version 4" sheet.

[21] TO [26] ACTIVATION AND RESTORE DELAYS

The loop A1, Low Battery detect and the AC fail detect have programmable activation and restore delays to reduce false alarms and nuisance troubles. Program the duration of activation and restore delays in seconds (in decimal).

		DEFAULT
[21]	Activation Delay for FIRE A1	20
[22]	Restore Delay for FIRE A1	40
[23]	Activation Delay for AC FAIL	20
[24]	Restore Delay for AC FAIL	40
[25]	Activation Delay for LOW BATT.	20
[26]	Restore Delay for LOW BATT.	40

[27] PROGRAMMABLE OUTPUT MODE

The programmable output can be activated as indicated below. (DEFAULT = 04).

LEFT DIGIT:

0X = NO INDICATION.

1X = ALARM ON A1 INDICATION.

2X = ALARM ON A2 INDICATION.

3X = ALARM ON A1 OR A2 INDICATION.

4X = LINE FAULT INDICATION.

8X = RING BACK (CONFIRMATION) SIGNAL AFTER KISS OFF (2 SECONDS PULSE). RIGHT DIGIT IS IGNORED

RIGHT DIGIT:

The programmable output activation time, after an event selected with left digit, can be selected as indicated below.

X0 = Steady ON.

X1 = Indication (2 sec. pulse) after 30 sec.

X2 = Indication (2 sec. pulse) after 60 sec.

*DVACS is a registered trade mark of Electro Arts Limited and covers a wide variety of products.
Full DVACS compatability applies only when the Sur-Gard equipment is connected to the RS-232 port of a DVACS F1F2-List 3 (or a DVACS F1F2-List 1) subset which is connected to a DVACS HUB-324 (or DVACS HUB-308) card.

PROGRAMMING WORK SHEET

CUSTOMER _____ CONTACT _____

ADDRESS _____

_____

TEL. # _____ FAX # _____

ID CODE _____ LINE # _____

CHECKSUM _____ DATE _____

Location	Automation Default	USER
[00] Identification Code	00	___
[01] All Call	04	___
[02] All Call Answer on alarm only\alarm restore	01	___
[03] Transmission Select for FIRE INPUT A1	02	___
[04] Transmission Select for FIRE TROUBLE A1	02	___
[05] Transmission Select for FIRE INPUT A2	02	___
[06] Transmission Select for FIRE TROUBLE A2	02	___
[07] Transmission Select for SUPERVISORY S1	02	___
[08] Transmission Select for SUPERVISORY S2	02	___
[09] Transmission Select for SUPERVISORY S3	02	___
[0A] Transmission Select for SUPERVISORY S4	02	___
[0B] Transmission Select for LOW BATT. DETECT	02	___
[0C] Transmission Select for AC FAIL DETECT	02	___
[0D] Zone Assignment for FIRE INPUT A1	01	___
[0E] Zone Assignment for FIRE TROUBLE A1	02	___
[0F] Zone Assignment for FIRE INPUT A2	03	___
[10] Zone Assignment for FIRE TROUBLE A2	04	___
[11] Zone Assignment for SUPERVISORY S1	05	___
[12] Zone Assignment for SUPERVISORY S2	06	___
[13] Zone Assignment for SUPERVISORY S3	07	___
[14] Zone Assignment for SUPERVISORY S4	08	___
[15] Zone Assignment for LOW BATT. DETECT	01	___
[16] Zone Assignment for AC FAIL DETECT	02	___
[17] Function Byte for FIRE INPUT A1	50	___
[18] Function Byte for FIRE TROUBLE A1	50	___
[19] Function Byte for FIRE INPUT A2	50	___
[1A] Function Byte for FIRE TROUBLE A2	50	___
[1B] Function Byte for SUPERVISORY S1	50	___

Location	Automation Default	USER
[1C] Function Byte for SUPERVISORY S2	50	
[1D] Function Byte for SUPERVISORY S3	50	
[1E] Function Byte for SUPERVISORY S4	50	
[1F] Function Byte for LOW BATT. DETECT	51	
[20] Function Byte for AC FAIL DETECT	51	
[21] Activation Delay for FIRE A1	20	
[22] Restore Delay for FIRE A1	40	
[23] Activation Delay for AC FAIL	20	
[24] Restore Delay for AC FAIL	40	
[25] Activation Delay for LOW BATT.	20	
[26] Restore Delay for LOW BATT.	40	
[27] Programmable Output Mode	04	

CHART OF PROGRAMMABLE ZONE BITS AND FUNCTION BYTES

PROGRAM VERSION DV-4420-A (AUTOMATION) AND DV-4420-L (LIBRARY 4/2 STYLE)

	DV-4420-A (Automation)					DV-4420-L (Library 4/2 style)				
Input Name	Zone bit Addr	Std. Zn bit	F. byte Addr	Funct. byte	Zone Description	Zone bit Addr	Std. Zn bit	F. byte Addr	Funct. byte	Zone Description
Fire A1	0D	01	17	50	----- Alm Zn#01	0D	01	17	30	Water Alm Zn# 01
Trouble A1	0E	02	18	50	----- Alm Zn# 02	0E	01	18	37	Other Trb Zn# D8
Fire A2	0F	03	19	50	----- Alm Zn# 03	0F	01	19	0C	Fire Alm Zn# 10
Trouble A2	10	04	1A	50	----- Alm Zn# 04	10	02	1A	37	Other Trb Zn# D9
Sup. 1	11	05	1B	50	----- Alm Zn# 05	11	01	1B	35	Lpres Trb Zn# C8
Sup. 2	12	06	1C	50	----- Alm Zn# 06	12	01	1C	34	Hpres Trb Zn# C0
Sup. 3	13	07	1D	50	----- Alm Zn# 07	13	01	1D	36	Valve Trb Zn# D0
Sup. 4	14	08	1E	50	----- Alm Zn# 08	14	01	1E	40	Tempr Alm Zn# 01
Low Batt.	15	01	1F	51	----- Alm Zn# 09	15	08	1F	6D	LowBt Alm Zn# 08
AC Fail	16	02	20	51	----- Alm Zn# 10	16	03	20	37	Other Trb Zn# DA

"AUTOMATION" means suggested function bytes to program if the receiver is used with a central station computer software such as SIMS or TAMCO and/or to have the alarms received as zones 1-10 without descriptive words such as "Fire" or "Valve".

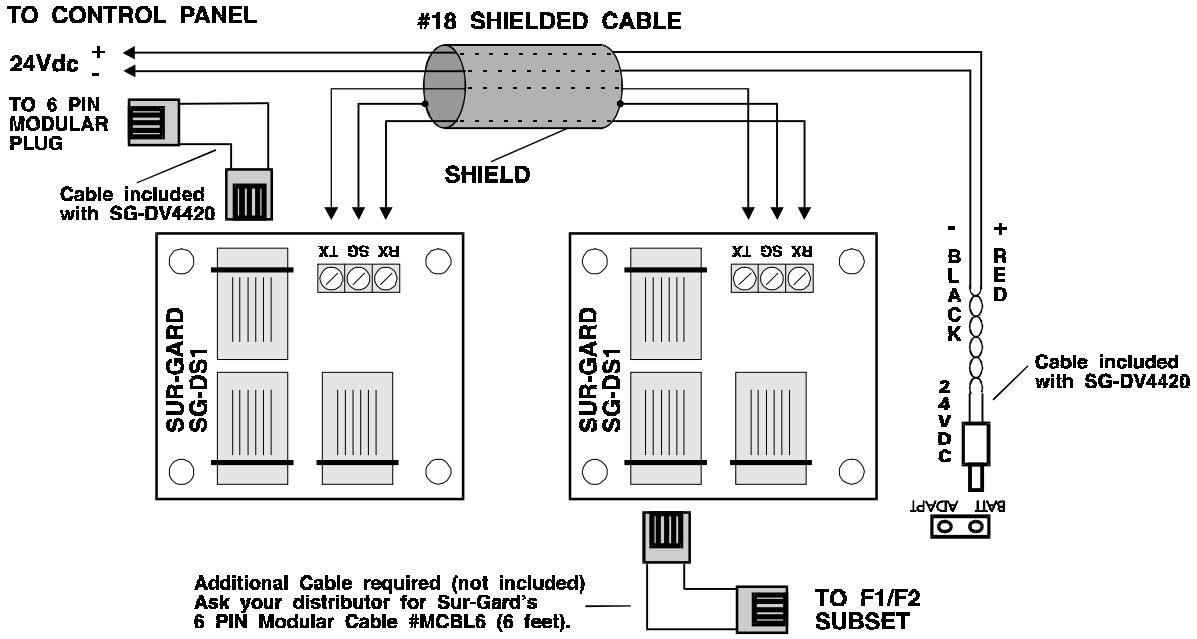
"LIBRARY 4/2 STYLE" means suggested function bytes to program to display a "4/2 style" zone description. When output to the printer or RS-232 computer port, the first digit of the zone tells you what type of zone it is, and the second digit tells you what zone number it is, (just like the 2 digit alarm code in 4/2 digital dialer format). In the example, the zone will be received as "Water alarm zone #01" for the Fire zone A1, "Fire alarm zone #10" for the Fire zone A2, etc...

TROUBLE SHOOTING

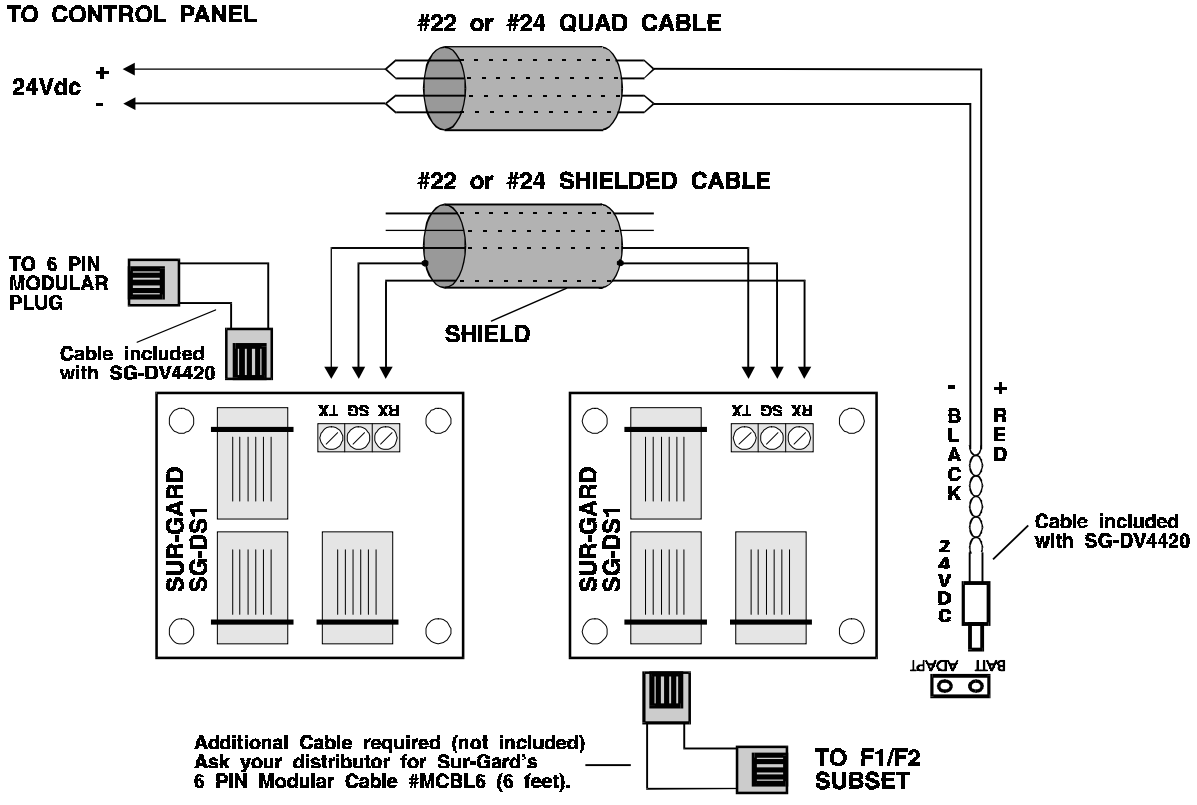
PROBLEM, SYMPTOMS	SOLUTION, ACTION
Questions to ask yourself when doing troubleshooting: ■ New installation? ■ Existing installation that was working? ■ Communication failed under what circumstances? (during power failure, after work done on building or system) ■ Intermittent problem?	**1.** Verify the Tx and Rx led indicators on the panel: **RX:** Should flash with polling at fairly steady rate. If inactive, check that the panel is otherwise functioning, check the watch dog led, and items 2 through 4 below, then contact the telephone company to be sure that leg is “ON”. **TX:** Flashes each time panel answers polling, longer burst for alarms, restores, openings, closings, etc... The Interval between flashes depends on the number of subscribers polled. When an alarm triggered, check if there is only one transmission (burst). Often needing two or more attempts to communicate is a sign of network problems. **2.** Verify 24V_{DC} supply to the F1/F2 modem subset. It should be between 24 and 26VDC. If more than one panel is connected to the same modem, negatives of the panel 24 volts modem power supplies must be connected together. **3.** Verify the connections between the panel and the F1/F2 subset. Check the cable, the jacks, 24VDC power and serial connections if more than 1 control is connected to the same F1/F2 subset. Try your spare modular cable. ***NOTE: If the cable length to the subset is longer than 50 feet, you must use low capacitance shielded cable for the serial connections and extra, heavy gauge wires for the 24V_{DC}.*** **4.** Verify the options settings on the F1/F2 subset. (don’t change them - just look and advise the telephone company of any discrepancies!) There are 3 dip switch units of 6 switches each inside, behind the magnetically attached faceplate. #1 is adjusted by the telephone company for levels. On #2, switches 2, 3, 5, 7, and 8 must be in the “ON” position. FOR #3, all switches must be “OFF”. **5.** Test the operation of the panel with a SG-DVT1 tester. If working correctly, switch modes on the SG-DVT1 and test communication through the F1/F2 subset and panel’s modular cable.

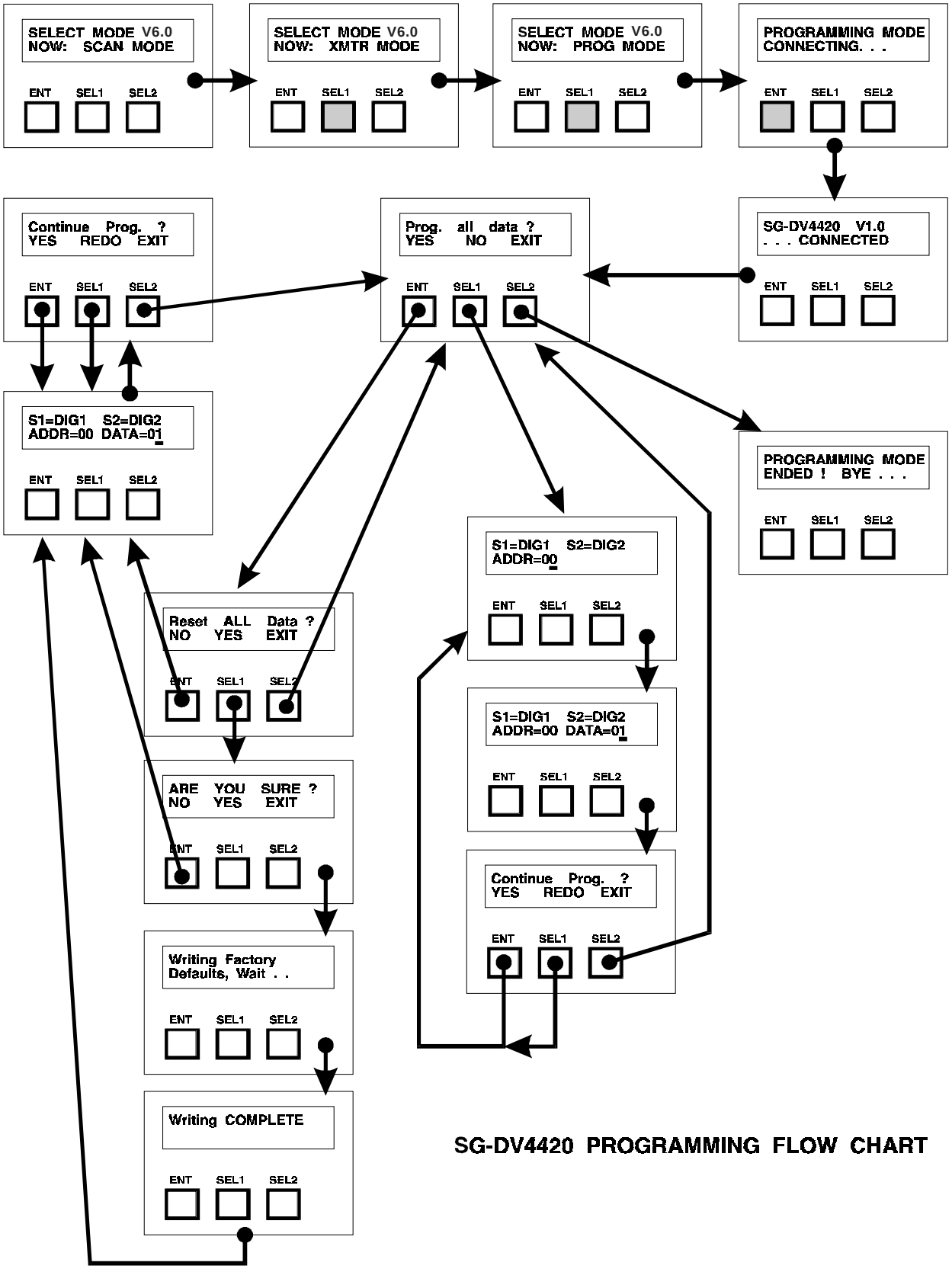
PROBLEM, SYMPTOMS	SOLUTION, ACTION
Panel sends ID ok, does not always respond to status report requests, or does not send alarms or other longer transmissions, or, receiver has periods of incorrect response for this subscriber.	**6.** If all the above checks indicate that the panel and wiring are correct, and the SG-DVT1 cannot communicate with the central station, contact your telephone company. Advise the company technician of any action taken so far. Request that the telephone company verify the following: ■ The leg on status ■ Hub options ■ Loop back test ■ Receiver polling seen on leg ■ Control panel answering polling Your tests above will give you an indication of what to expect. For example, If the panel Tx led shows no activity, you won't expect the telephone company to see the panel answering the polling! **7.** If there is some, but unsatisfactory communication, have the telephone company measure the distortion on the leg. Each bit transmitted should be near 6.6mS long. Distortion can cause bits, eg: spaces or zeros, to be shorter and be incorrectly sampled, causing rejection of the data. If you have the equipment and know-how, check this yourself before calling the telephone company. **8.** Check the software version of the panel, newer programs may have some improvements to work on higher distortion lines.
A1 or A2 Fire/Trouble LED on.	Verify the class a loops A1 and A2 wiring: + to + , - to - (see connection diagram page 6).

For 50 to 100 feet



OR





SG-DV4420 PROGRAMMING FLOW CHART

Limited Warranty

Sur-Gard Security Systems Ltd. warrants that for a period of twelve months from the date of purchase, the product shall be free of defect in materials and workmanship under normal use and that in fulfilment of any breach of such warranty, Sur-Gard Security Systems Ltd. shall, at its option, repair or replace the defective equipment upon return of the equipment to its repair depot. This warranty applies only to defects in parts and workmanship and not to damage incurred in shipping or handling, or damage due to causes beyond the control of Sur-Gard Security Systems Ltd. such as lightning, excessive voltage, mechanical shock, water damage, or damage arising out of abuse, alteration or improper application of the equipment.

The foregoing warranty shall apply only to the original buyer, and is and shall be in lieu of any and all other warranties, whether expressed or implied and of all other obligations or liabilities on the part of Sur-Gard Security Systems Ltd. This warranty contains the entire warranty. Sur-Gard Security Systems Ltd. neither assumes, nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

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WARNING: Sur-Gard Security Systems Ltd. recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.

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INSTRUCTION MANUAL

SG SECURITY COMMUNICATIONS™

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SG-DV4420

Software Version 1.1

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