

**Model**

**TS-12CS**

**INSTALLATION  
INSTRUCTIONS**



**FIRE BURGLARY INSTRUMENTS INC.**

50 Engineers Road, Hauppauge, N.Y. 11788

516-582-6161

800-645-5430

**“WE DO WHAT THEY DON’T”**

MODEL #TS-12CS  
INSTALLATION MANUAL

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1. GENERAL INFORMATION:

The TS-12CS is a four zone fire alarm control panel. This Fire panel consists of 5 separate modular boards. The TS-12 main board, the 3ZDM module, the TS119 dialer, the power supply board and the transformer board.

2. FUNCTIONAL SWITCHES:

A. TEST:

Operation of this switch alarms all zones and activates all local audible and visual devices.

NOTE: WHEN RESETTING THE PANEL FROM TEST CONDITION, HOLD DOWN SYSTEM RESET SWITCH, MOVE TEST SWITCH BACK TO NORMAL -- THEN RELEASE RESET SWITCH.

B. ZONE SILENCE SWITCHES

If an alarm occurs on any one of the four zones, that respective zone's silence switch may be pushed down which will shut off the audible (bell output) without resetting that zone's alarm memory LED. When the button is in the down position, that zone's yellow trouble LED and the system trouble LED will come on, which will cause a System Trouble Transmission.

Note: These switches will not affect the reversing relay, unless, they are pushed down prior to alarm condition.

Note: These switches can be disabled by connecting the following jumpers:

J3 on TS12 = zone 1
J10 on 3ZDM = zone 2
J13 on 3ZDM = zone 3
J16 on 3ZDM = zone 4

See Paragraph 5 Waterflow Connections

C. RESET SWITCH:

This switch when depressed resets all zones and smoke detectors from the alarm condition. NOTE: Before resetting panel the device that caused the original alarm must be reset. Resetting the alarm condition will also cause Restore transmission to the C.O. if so programmed.

D. TROUBLE SILENCE SWITCH:

When a system trouble occurs the yellow system trouble L.E.D. will light, the audible trouble sonalert will sound and a system trouble transmission to the C.O. will occur. Sliding the switch down shall silence the audible signal. Upon restoration of the troubled circuit, the audible trouble signal shall re-sound indicating the trouble silence switch must be pushed back to its normal position, which shall silence the audible signal and extinguish the system trouble YELLOW L.E.D.

### 3. SUPERVISED DETECTION CIRCUITS:

#### Zone 1

Terminals 5 (+) and 4 (-) are for the connection of any N.O. U.L. listed device (heat detectors, manual pull stations, smoke detectors, etc.). Supervision is achieved with the installation of a 3900 ohm 1/2W E.O.L. resistor.

#### Zone 2

Terminals 19 (+) and 18 (-) on the 3ZDM module are for the connection of any N.O. U.L. listed device (heat detectors, manual pull stations, smoke detectors, etc.). Supervision is achieved with the installation of a 3900 ohm 1/2W E.O.L. resistor.

#### Zone 3

Terminals 24 (+) and 23 (-) on the 3ZDM module are for the connection of any N.O. U.L. listed device (heat detectors, manual pull stations, smoke detectors, etc.). Supervision is achieved with the installation of a 3900 ohm 1/2W E.O.L. resistor.

#### Zone 4

Terminals 29 (+) and 28 (-) on the 3ZDM module are for the connection of any N.O. U.L. listed device (heat detectors, manual pull stations, smoke detectors, etc.). Supervision is achieved with the installation of a 3900 ohm 1/2W E.O.L. resistor.

### 4A. SUPERVISED ALARM SIGNAL OUTPUT:

Terminal 7 (-) and 8 (+) on the TS12 main board are for connection of ONLY U.L. listed 12 V.D.C. polarized signalling devices. This output is supervised with the installation of a 220 ohm 5W resistor which connects in parallel within the last signalling device on the circuit. (Refer to DWG on page 13). This output is fused at 1 amp. (DO NOT EXCEED .850A). If a break or short should occur in the field wiring, the yellow signal circuit fault L.E.D. will light and a system trouble transmission will occur. (Refer to TROUBLE SILENCE SWITCH and proceed as indicated).

### 4B. ALARM DRY CONTACTS:

Terminals 9 (C), 10 (N.C.) and 11 (N.O.) are Form "C" dry contacts. These contacts will transfer whenever an ALARM has occurred or IF THE TEST SWITCH HAS BEEN OPERATED. Contacts rated 26VDC @ 5A

Terminals 21 (C), and 20 (N.O.) are dry contacts for zone 2. These contacts will close whenever an ALARM on zone 2 has occurred or IF THE TEST SWITCH HAS BEEN OPERATED. Contacts rated 26VDC @ 5A

Terminals 26 (C) and 25 (N.O.) are dry contacts for zone 3. These contacts will close whenever an ALARM on zone 3 has occurred or IF THE TEST SWITCH HAS BEEN OPERATED. Contacts rated 26VDC @ 5A

Terminals 31 (C), and 30 (N.O.) are dry contacts for zone 4. These contacts will close whenever an ALARM on zone 4 has occurred or IF THE TEST SWITCH HAS BEEN OPERATED. Contacts rated 26VDC @ 5A

5. WATERFLOW SWITCH CONNECTION:

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When connection is made to a waterflow alarm switch, a jumper must be connected on the zone used for waterflow.

Example:

<u>Zone #</u>	<u>Connect</u>
1	J3 on TS-12 main board
2	J10
3	J13
4	J16

} on 3ZDM module

6. POWER SUPPLY

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The 12VDC output of the power supply is regulated, filtered and rated at 3 amps.

It also provides current for charging sealed lead acid (gel type) stand-by batteries up to 8 A.H. of capacity. The transformer secondary is fused at 4 amps. Connection to 110 VAC must comply with the local codes and/or article 760 Fire Protection Signalling Systems of the National Electric Code NFPA #70-1975.

Upon loss of 110 VAC the control panel will automatically transfer to battery stand-by and a system trouble transmission and L.E.D. will occur.

7. 12 VDC SMOKE DETECTOR POWER:

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Terminals 2 (-) and 3 (+) is a 13 VDC regulated and filtered output. This output is fused at 1A. Operation of the reset switch removes power from this output and resets all smoke detectors. See Note 1, Stand by Batteries

8. 12 VDC AUXILIARY POWER

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Terminals 1 (+) and 2 (-) is a 12VDC regulated and filtered output used for powering external devices such as ie: (door holders, transmitters, auxiliary relay, etc.) This output is fused at 1A. See Note 1, Stand-by Batteries Use UL listed smoke detectors ESL Series 440C.

NOTE: OPERATION OF THE RESET SWITCH HAS NO EFFECT ON THIS OUTPUT.

9. STAND-BY BATTERIES:

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Two 12 VDC 4AH re-chargeable sealed lead acid batteries must be connected to this panel utilizing the RED wires (positive) and the BLACK wires (negative). The control panel power supply provides charging current up to .250A.

UL requires 24 hours standby, the time on battery, if the AC power is lost.

Note 1: 100mille amps is the maximum allowable current, which may be drawn by external devices connected to the TS12CS.

EX: Smoke detectors, door holders, tele-lines, and other energized devices drawing current from the control panel while in its normal supervisory condition.

NOTE: DO NOT INCLUDE ANY ALARM SIGNALLING DEVICES IN YOUR CALCULATIONS.

Note: If battery voltage drops to approximately 10VDC, the low battery L.E.D. on the TS 119 will light and a system trouble transmission will occur.

10. SYSTEM TROUBLE

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Whenever a zone trouble, ground fault, signal circuit fault, line fault, AC loss, low battery trouble occurs, a system trouble L.E.D. and sonalert will result. Furthermore, a system trouble transmission will be sent to the Central Office. See trouble silence switch.

Installing Relay K-3 will provide a set of N.O. "Dry Contacts" on terminals 15 and 16. Whenever a system trouble occurs, these contacts will close and remain closed until all system trouble conditions are cleared.

11. REMOTE ALARM ANNUNCIATOR:

The TS-12CS has provisions for the connection of a supervised remote alarm annunciator. The Model RZA-4. This annunciator is a 5 wire device and has 4 alarm L.E.D.'s (one for each zone). The field wiring and associated L.E.D.'s are supervised for breaks. Should a break occur, the corresponding yellow zone trouble L.E.D. will light and a system trouble will occur.

Prior to connecting the RZA-4, the following jumpers must be cut. J1 on TS-12 main board. J8, J11, J14 on 3ZDM module.

CONNECT THE RZA AS FOLLOWS

RZA - 4	TS-12 Main Board	3ZDM
Red Wire	Term (3)	
Zone 1 Black	Term (6)	
Zone 2 Black		Term (17)
Zone 3 Black		Term (22)
Zone 4 Black		Term (27)

12. CODED OPERATION:

When using coded initiation devices, the following jumpers must be cut on the zone (s). (Refer to DWG. on page 13 for jumper locations).

Zone	Jumper
Z1	J2
Z2	J9
Z3	J12
Z4	J15

13. GROUNDING AND GROUND FAULT DETECTION:

Terminal 14 MUST be connected to a separate EARTH GROUND CONNECTION. Cold water pipe ONLY. Failure to ground the panel properly shall result in a loss of lightning protection, ground detection and will also reduce the systems tolerance to electrical transients and outside electrical influence.

NOTE: A.C. NEUTRAL OR CONDUIT GROUND IS NOT ACCEPTABLE.

Should a ground occur on the field wiring, a ground fault trouble L.E.D. will light and a system trouble transmission will occur.

WIRING RESISTANCE CHART:

SOLID CONDUCTORS  
A.W.G. OR B. & S.

GAUGE	OHMS PER/1000 FT.
12	1.6 ohms
14	2.5 ohms
16	4.0 ohms
18	6.4 ohms
20	10.0 ohms
22	16.0 ohms

15. TROUBLE SHOOTING:

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<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>POSSIBLE SOLUTION</u>						
1. System trouble L.E.D. on Sonalert Sounding. NO other Yellow L.E.D. on.	<ol style="list-style-type: none"> <li>1. Failure of 110 VAC</li> <li>2. Failure of Power Supply</li> <li>3. Failure of 4A Fuse</li> </ol>	<ol style="list-style-type: none"> <li>1. Check 110 VAC Supply</li> <li>2. Check power supply fuse</li> <li>3. Check 12 VDC output w/batteries disconnected</li> </ol>						
2. Ground Fault L.E.D. on	<ol style="list-style-type: none"> <li>1. Field wiring shunted to ground</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove all field wiring from control panel. With your ohm-eter check each wire with respect to earth ground. There should be no continuity between wiring and earth ground</li> </ol>						
3. Signal circuit fault L.E.D. on and system trouble sounding	<ol style="list-style-type: none"> <li>1. Open on signal circuit wiring</li> <li>2. Defective signal circuit fuse</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove wiring from terminals 7 &amp; 8. With your ohmmeter connected to these wires you should read 220 ohms <math>\pm</math> 10%. Reverse your ohmmeter leads and you should read 200 ohms or less. This reading will depend on how many devices are attached to the wiring.</li> <li>2. Replace fuse if defective</li> </ol>						
4. Any zone trouble L.E.D. on and system trouble sounding.	<ol style="list-style-type: none"> <li>1. Open in detection loop field wiring.</li> <li>2. Relay-unplugged or coil open:               <table style="margin-left: 40px;"> <tr> <td>K1 (Zone 1)</td> <td rowspan="4" style="font-size: 2em; vertical-align: middle;">}</td> <td rowspan="4" style="vertical-align: middle;">3ZDM</td> </tr> <tr> <td>K1 (Zone 2)</td> </tr> <tr> <td>K2 (Zone 3)</td> </tr> <tr> <td>K3 (Zone 4)</td> </tr> </table> </li> <li>3. Zone silence switch off normal</li> <li>4. Remote L.E.D. and/or field wiring open</li> <li>5. Zone alarm L.E.D. open</li> </ol>	K1 (Zone 1)	}	3ZDM	K1 (Zone 2)	K2 (Zone 3)	K3 (Zone 4)	<ol style="list-style-type: none"> <li>1. Remove wiring from zone. Measure wire with your ohmmeter you should read 3900 ohms <math>\pm</math> 10%.</li> <li>2. Check coil of relay. You should read 180 ohms <math>\pm</math> 10%.</li> <li>3. Return switch to normal</li> <li>4. Check for continuity with your ohmmeter</li> <li>5. Cause an alarm on this zone. If L.E.D. won't come on, replace L.E.D.</li> </ol>
K1 (Zone 1)	}	3ZDM						
K1 (Zone 2)								
K2 (Zone 3)								
K3 (Zone 4)								

TS119 DIALER TERMINAL CONNECTIONS

TS119 Terminals	TS12/3ZDM Terminals	Description
11 12 13 14		Phone line 2 terminals: Connect these terminals to a Telephone Co. approved RJ31X modular jack via an F.B.I. model 368 cord. 12-green, 11-red, 13-grey, 14-brown. Phone line 2 has double pole line seizure.
15 16 17 18		Phone line 1 terminals: Connect these terminals to a Telephone Co. approved RJ31X modular jack via an F.B.I. model 368 cord as follows: brown-17, grey-18, green-16, red-15. Phone line 1 has double pole line seizure.
1	4	Zone 1 of the TS12 trips channel 1 on the TS119 HERE.
2	18	Zone 2 of the 3ZDM trips channel 2 on the TS119 HERE.
3	23	Zone 3 of the 3ZDM trips channel 3 on the TS119 HERE.
4	28	Zone 4 of the 3ZDM trips channel 4 on the TS119 HERE.
6	Blue Wire	System trouble input from the TS12. Supervises the TS12. Supervises the power to the TS-119 and trips the common trouble channel on the TS119.
7(+) 8(-)	1 2	The TS119 is powered from the TS12 on these terminals
19	Common Trouble Terminal	When the TS119 senses lo battery, line fault, or fail to go thru, it trips the TS12 system trouble circuit on this terminal.
7(+) 21(-)		A remote low battery L.E.D. may be wired to these terminals if desired. If the battery voltage on the TS12CS drops to approximately 10VDC, the on board and remote low battery L.E.D.'s will lite, and a system trouble transmission and L.E.D. will occur.
7(+) 23(-)		A remote "line fault 1" L.E.D. may be wired to these terminals. If Telco line 1 is cut or removed from its appropriate terminals for approximately 110 seconds the on board, and remote "line fault 1" L.E.D. will lite and a system trouble transmission will occur. If the TS119 is using phone line 1 at the time it senses "line fault1", it will automatically switch to phone line 2 to make its transmission. Otherwise, if "line fault 1" is sensed while TS119 is using the phone line 2, a line switch does not occur.
7(+) 22(-)		A remote "line fault 2" L.E.D. may be wired to these terminals. This circuit operates the same as "line fault 1".
7(+) 20(-)		A remote "Failure to Communicate" L.E.D. may be wired to these terminals. In the event the TS119 activates as a result of a trouble or alarm condition and communication to the Central Office is unsuccessful, after the Prom programmed number of attempts, the on board and remote "Failure to Communicate" L.E.D., and system trouble will occur. THE TS119 RESET BUTTON must be depressed to extinguish this condition.
10	14	The TS119 gets its ground connection to the TS12 HERE.
Note: TS119 jumpers JP1-JP4 must be set in the A position when the TS119 is used in the TS 2CS.		

TS119 PROM PROGRAMMING INSTRUCTIONS

The TS119 Digital Dialer will transmit fire alarm codes and restores by zone if desired, and a separate system trouble code. Programming is done on either the FBI 110 or 110C programmer. The Program must be burned onto a Prom chip model F102. This prom can actually hold 4 separate TS119 programs (in the event of error or changes). Only one quarter of the prom is used at a time for a program. Each quarter of the prom is called a Quadrant. They are appropriately called Quadrant 1-4. Programming may be done on any one of the four quadrants. The TS119 must be set up to read whichever quadrant the actual program has been burned on. Resistor jumpers R72 and R73 control which quadrant the TS119 will read. The following Truth Table explains jumper connections versus 110 and 110C programmer switch settings.

Quadrant	110C Rotary Switch Setting	110 Switch Settings		TS119 Jumpers	
		S8	S7	R 72	R 73
1	1	South	South	Connected	Connected
2	2	South	North	Cut	Connected
3	3	North	South	Connected	Cut
4	4	North	North	Cut	Cut

The new TS119 is a digital dialer which uses a program chip (prom). Understanding the programming instructions, which follow, is essential because many outputs are possible with each activation. The dialer will transmit codes for either momentary or maintained inputs and restores. If a maintained input is aborted during transmission a choice of either an abort code or complete aborting of the transmission is programmable. The dialer is also capable of accessing three different receivers, with each activation, and will shut down after being kissed-off by one or all receivers, depending on programming.

**CAUTION: THERE SHOULD BE NO POWER ON THE TS-119 WHEN THE PROM IS INSERTED. PLUGGING IN THE PROM WITH POWER ON THE PANEL, WILL CAUSE THE DIALER TO TRANSMIT OUT OF PROGRAM.**

Before using the digital dialer, the telephone company shall be requested to install two USOCRJ31X jacks on the telephone line. Give the telephone company the FCC registration (AE398E-69554-AL-E) and the ringer equivalence (O.OB) numbers for the TS119. Connect the TS119 to an approved modular plug (#368) to mate with the RJ31X's as shown

Should the TS119 cause harm to the telephone network, the telephone company may temporarily discontinue service until the problem is corrected. Notice of such action will be given by the telephone company.

Should the telephone company make any changes to its facility or other requirements that could render the TS119 incompatible, the customer shall be given adequate notice by the telephone company, in writing. Upon receipt of this information from the customer, the manufacturer shall advise the customer as to what actions must be taken to maintain uninterrupted service.

The model TS119 may not be connected to party lines or coin lines. If trouble is experienced, the TS119 shall be disconnected from the phone line, by means of the plug shown to determine if the TS119 is malfunctioning. If the TS119 is malfunctioning, do not reconnect until the problem has been corrected.

The prom used is a Model F102 (74S387) and is programmed on our Model 110 or 110C programmers as follows.

- 1) Plug in the programmer. OP should appear on the LED display.
- 2) Set desired quadrant.
- 3) The first digit of the OP field will determine the dialer transmission of fire zone 1 in the event an attempt is made to abort the alarm code transmission. Aborting the transmission is accomplished by operation of the TS12CS reset button prior to the zone alarm code reaching the Central Office. The following options are available on abort.

This digit will also determine if the dialing type will be rotary or touchtone.  
 Note: If touchtone dialing is desired, the model F103 chip must be inserted in the U12 socket, on the TS119, white dot Left.

FIRE ZONE 1

Digit	Dialer Output	Type of Dialing
0	No Abort	Rotary
1	Stop dialing on abort	Rotary
2	Restore on abort	Rotary
3	Abort code on abort	Rotary
8	No abort	Touchtone
9	Stop dialing on abort	Touchtone
A	Restore code on abort	Touchtone
B	Abort code on abort	Touchtone

If fire zone 1 is not used, but rotary dialing is used, program digit 1.

If fire zone 1 is not used, but touchtone is used, program digit 9.

- 4) The second digit of the OP field will determine the dialer transmission for fire zone 2 in the event of an abort. This digit will also determine if the dialer will transmit an automatic test code. If a test code is desired, it will be sent at 18 hour intervals after the last transmission. The proper digit to program in the second location of the OP field is as follows:

FIRE ZONE 2

Digit	Dialer Output	Self Test *
0	No abort	None
1	Stop dialing on abort	None
2	Restore code on abort	None
3	Abort code on Abort	None
4	No abort	18 Hr
5	Stop dialing on abort	18 Hr
6	Restore code on abort	18 Hr
7	Abort code on abort	18 Hr

\*NOTE: NFPA 71 requires self test option be programmed

Fire Zone 2, cont'd.

If both fire zone 2 and self test ARE NOT USED, program DIGIT 1

If fire zone 2 is NOT USED, but Self Test IS USED, program DIGIT 5

- 5) The third digit will determine the operation of fire zone 3.

FIRE ZONE 3

Digit	Dialer Output
0	No abort
1	Stop dialing on abort
2	Restore on abort
3	Abort code on Abort

All options may have a restore programmed later in the procedure

- 6) The fourth digit will determine the operation of fire zone 4.

FIRE ZONE 4

Digit	Dialer Output
0	No abort
1	Stop dialing on abort
2	Restore on abort
3	Abort code on Abort

All options may have restore programmed later in the procedure.

- 7) Beginning with the fifth digit of the OP field if a common prefix is needed for all receivers, (9, area code, etc.), it may be keyed in here. If a time delay is needed before or between digits, key in "C" where the delay (3 secs.) is needed.
- 8) Press ENTER switch, then 9. 1P should appear on the LED display. Key in the first telephone number. Up to 11 digits may be used.

Information must be entered in this field

- 9) Press ENTER switch, then 9. 2P should appear on the LED display. Key in the second telephone number. Up to 11 digits may be used. If there is no second number, leave this field Blank.
- 10) Press ENTER switch, then 9. 3P should appear on the LED display. Key in the third telephone number. Up to 11 digits may be used. If there is no third number, leave this field Blank.
- 11) Press ENTER then 9. AF should appear on the LED display. The first digit in this field will determine the number of attempts the dialer will make to reach the receiver in the event the receiver is busy.

See Chart below:

No. of Attempts	Use of Digit	No. of Attempts	Use Digit	No. of Attempts	Use Digit
1	1	7 *	7	12	C
2	2	8 *	8	13	D
3	4	9 *	9	14	E
4	4	10 *	0	15	A
5	5 *	11	B	Unlimited	F

\* NOTE: Number of attempts limited to 5 to 10 per NFPA 71

11), cont'd.

**IMPORTANT:** When F is pressed, the number does not display, but the space is left blank. The second digit in the field will determine the number of receivers the dialer must access before it shuts down. Select as follows: If only one phone number is used, program number A in the second location of AF field.

Any one receiver - A  
All receivers - E

- 12) Press ENTER, then 9. FF should appear on the LED display. This field will determine receiver format. One digit must be keyed in for each phone number programmed.

NOTE: NFPA requires that units transmit into listed Fire Receivers at listed central stations.

See chart for selecting the proper receiver code:

TESTED & APPROVED UL RECEIVER TYPE	Use Digit
FBI	1
Radionics (2300)	1
Radionics (1400)	3
Ademco with Kiss-off	5

Receiver Type	Use Digit
Franklin, Quickalert	1
DCI	1
Sescoa	1
Adcor CDR 50	3
Ademco without Kiss-off	4
Silent Knight without Kiss-off	6
Silent Knight with Kiss-off	7

Information must be entered in this field

- 13) Press ENTER, then 9. AC should appear on the LED display. Key in a 3 or 4 digit account code. A 4 digit account code can only be used with receiver that is capable of handling it.

Information must be entered in this field.

- 14) Press ENTER, then 9. AL should appear on the LED display. Key in digits for the following alarms.

(Program an "F", which leaves a blank, for any location NOT BEING USED)

Locations	Description	Code
1	Zone 1 alarm code	0-9 or F
2	Zone 2 alarm code	0-9 or F
3	Zone 3 alarm code	0-9 or F
4	Zone 4 alarm code	0-9 or F
5	System Trouble Restore Code	0-9 E or F
6	System Trouble alarm code	0-9 A or F
7	Zone 1 Restore Code	0-9 or F
8	Zone 2 Restore Code	0-9 or F
9	Zone 3 Restore Code	0-9 or F
10	Zone 4 Restore Code	0-9 or F
11	Abort Code/Test Code	0-9 D or F

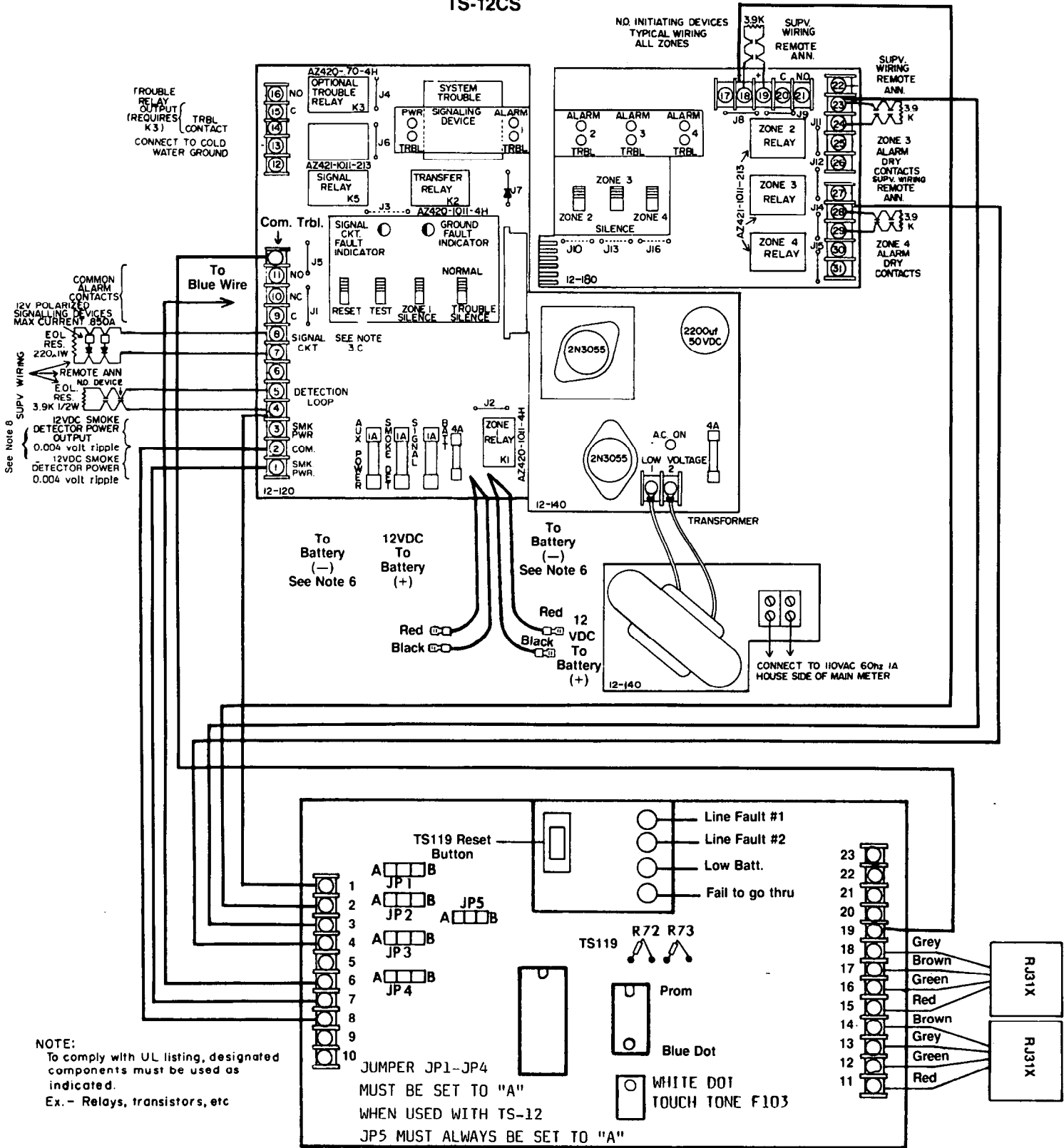
System Trouble Alarm Code

NOTE: For English Language Printout  
of codes to Radionics and FBI  
Receiver use

A	Trouble
D	Abort
E	Restore



# TS-12CS



See Note 8  
 12VDC SMOKE DETECTOR POWER OUTPUT  
 0.004 volt ripple  
 12VDC SMOKE DETECTOR POWER  
 0.004 volt ripple

**NOTE:**  
 To comply with UL listing, designated components must be used as indicated.  
 Ex. - Relays, transistors, etc

**NOTES:**

- RELAY CONTACT RATING  
 ALL RELAY DRY CONTACTS 28VDC AT 5A RESISTIVE
- INITIATING CIRCUIT-CLASS B SUPERVISED WIRING  
 A. MAXIMUM RESISTANCE IS 100 OHMS  
 B. INITIATING DEVICES-NORMALLY OPEN, MINIMUM CONTACT RATING 12VDC AT .05A  
 C. END-OF-LINE RESISTOR WILL BE 3000 OHMS, 1/2 WATT MINIMUM
- SIGNAL CIRCUIT-CLASS B SUPERVISED WIRING  
 A. MAXIMUM CURRENT DRAW IS .850 AMP  
 B. SIGNALING DEVICES WILL BE 12 VOLT POLARIZED DEVICES  
 C. END-OF-LINE RESISTOR WILL BE 220 OHMS, 1 WATT MINIMUM
- REMOTE STATION OUTPUT (TEL-LINE) REQUIRES K4  
 A. MAXIMUM CURRENT TO OBTAIN 12VDC = .020A  
 B. MAXIMUM CURRENT LIMITED TO .240 AMP
- FUSE INFORMATION  
 AC-AGW4 SIGNAL-ASC1 AUXILIARY-AGC-1  
 BAT-AGW4 SMOKE-AGC1
- BATTERY INFORMATION  
 12 VOLT, 4.0 AH RECHARGEABLE SEALED LEAD ACID  
 12 VOLT, 6.0 AH RECHARGEABLE SEALED LEAD ACID  
 12 VOLT, 8.0 AH RECHARGEABLE SEALED LEAD ACID  
 MAX. ALLOWABLE CHARGING CURRENT .250A

**7. JUMPER DEFINITION**

- J1 ZONE 1 CUT WHEN USING RZA
- J2 ZONE 1 CUT WHEN USING CODED DEVICES
- J3 ZONE 1 CONNECT WHEN USING ZONE 1 AS WATERFLOW ZONE
- J4 CUT WHEN USING K3-K4 TO TRANSMIT TROUBLE SIGNAL TO REMOTE STATION
- J5 CUT WHEN LATCHING "REVERSING RELAY" NOT DESIRED
- J6 CUT IF ALARM SIGNAL NOT REQUIRED AT REMOTE STATION WHEN USING SYSTEM TEST SWITCH
- J7 CUT CR19 WHEN USING DRY CELLS
- J8 ZONE 2 CUT WHEN USING RZA
- J9 ZONE 2 CUT WHEN USING CODED DEVICES
- J10 ZONE 2 CONNECT WHEN USING ZONE 2 AS WATERFLOW ZONE
- J11 ZONE 3 CUT WHEN USING RZA
- J12 ZONE 3 CUT WHEN USING CODED DEVICES
- J13 ZONE 3 CONNECT WHEN USING ZONE 3 AS WATERFLOW ZONE
- J14 ZONE 4 CUT WHEN USING RZA
- J15 ZONE 4 CUT WHEN USING CODED DEVICES
- J16 ZONE 4 CONNECT WHEN USING ZONE 4 AS WATERFLOW ZONE

- Smoke det. power-max. current available=.05A
- Aux. power-max. current available=.750A
- For compliance with NFPA-71, 72A, 74, household fire warning systems, the TS-12CS fire panel MUST be in conjunction with Wheelock No. 32P-12 warning horn.

MANUAL FIRE ALARM CONNECTION  
 AUTOMATIC FIRE ALARM CONNECTION  
 WATERFLOW FIRE ALARM CONNECTION  
 SUPERVISORY FIRE ALARM CONNECTION  
 NON-CODED OR CODED  
 CLASS B WIRING  
 POLARITY REVERSAL  
 COMPLIES WITH NFPA-71, 72A, 74

Refer to I-2251 for customer operating instructions, I-2252 for installation instructions.