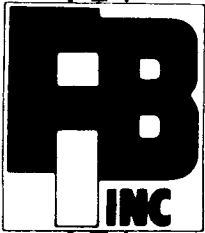


**Model**

**TS-12**

**INSTALLATION  
INSTRUCTIONS**



**FIRE BURGLARY INSTRUMENTS<sup>TM</sup> INC.**

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**"WE DO WHAT THEY DON'T"**

MODEL #TS-12

INSTALLATION MANUAL

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1. GENERAL INFORMATION:

The TS-12 is a single zone fire alarm control panel which is field expandable to 4 zones with the addition of the "optional" 3-ZDM MODULE. The TS-12 is U.L. listed to meet NFPA standards 72A (local) 72C (Remote Station Signalling) and 74 (Household Fire Warning).

2. FUNCTIONAL SWITCHES:

A. TEST:

Operation of this switch alarms all zones and activates all local audible and visual devices. In addition the optional reversing relay (K-4) will activate and transmit a signal to the Remote Station. If transmission to the remote station is not desirable during this test CUT J-6 before testing.

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

B. SIGNAL SILENCE (ALL ZONES):

This switch when in down position shall silence all alarm signals connected to the system. Each active zone has its own individual SIGNAL SILENCE SWITCH. When in down position, this switch shall cause a zone trouble (YELLOW L.E.D.) as well as a system trouble (YELLOW L.E.D.).

NOTE: This switch will not effect the Reversing Relay. unless the switch is operated before an alarm occurs.

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.

D. TROUBLE SILENCE SWITCH:

When a system trouble occurs the yellow system trouble L.E.D. will light and the audible trouble signal will sound. Sliding the switch down to the silence position shall silence the audible signal ONLY. Upon restoration of the troubled circuit the audible trouble signal shall re-sound indicating to the installer to return the trouble signal switch back to its normal position, which shall silence the audible signal and extinguish the system trouble YELLOW L.E.D.

3. SUPERVISED DETECTION CIRCUIT:

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

connected in parallel within the last device on the circuit, (Refer to DWG #12-100-1001 on inside of cabinet door). This resistor is factory provided.

The maximum allowable loop resistance is 4000 ohms (with EOL and field wiring).

If a break in the zone wiring should occur, the corresponding zone trouble L.E.D (YELLOW) will light and a system trouble will occur. (Refer to TROUBLE SILENCE SWITCH and proceed as indicated).

4A. SUPERVISED ALARM SIGNAL OUTPUT:

Terminal 7 (-) and 8 (+) 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 #12-100-1001 located on inside cover of cabinet). 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 will occur. (Refer to TROUBLE SILENCE SWITCH and proceed as indicated).

4B. ALARM DRY CONTACTS:

Term 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. "Contact Ratings 26 VDC @ 5A".

5. REMOTE SIGNALLING VIA LEASED LINES (POLARITY REVERSAL):

Installing (optional) relay K4 will provide a current limited 12VDC output on term 13 (-) and 12 (+). This output is provided for connection to a polarity sensitive remote receiving panel. (Maximum available current to maintain 12 VDC is .020A).

If transmission of a system trouble to the remote station is required, install trouble relay K3 and cut J4. NOTE: The transmission of an ALARM signal will override the trouble condition. CAUTION: Refer to item 2A "Test".

"Note: The following may be waived by the governing Fire Authority. When this panel is connected to a remote station receiving unit, program the zone silence switch for non-silencing conditions by connecting the zone jumpers as indicated in paragraph 6 below."

6. WATERFLOW SWITCH CONNECTION:

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

Zone #	Connect
1	J 3
2	J10
3	J13
4	J16

NOTE: Consult factory when ordering panel for waterflow alarm connector.

7. POWER SUPPLY:

The 12 VDC output of the power supply is unregulated, 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 will occur.

8. 12 VDC SMOKE DETECTOR POWER: (See Note 1)

Terminals 2 (-) and 3 (+) is a 12 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.

9. SMOKE DETECTOR POWER: (SEE NOTE 1.)

Terminals 1 (+) and 2 (-) is a 12 VDC regulated and filtered output used for powering external devices such as ie: (door holders, transmitters, auxilliary relay, etc.) This output is fused at 1A. (DO NOT EXCEED .750A).

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

10. STAND-BY BATTERIES:

A 12 VDC re-chargeable sealed lead acid battery may be connected to this panel utilizing the RED wire (positive) and the BLACK wire (negative). The control panel power supply provides charging current up to .250A. This charging current has enough capacity to re-charge sealed lead acid batteries up to 8 A.H. capacity.

BATTERY STAND-BY CALCULATIONS

A single zone control panel draws .055A A four zone control panel draws .096A to comply with local codes and NFPA battery stand-by requirements. See chart below:

24 HOUR STAND-BY

NUMBER OF ZONES	USING 4 A.H. BATTERIES	USING 6 A.H. BATTERIES	USING 8 A.H. BATTERIES
1	.085	.155A	.225A
4	.044A	.114A	.185A

60 HOUR STAND-BY

NUMBER OF ZONES	USING 4 A.H. BATTERIES	USING 6 A. H. BATTERIES	USING 8 A. H. BATTERIES
1	.005A	.030A	.070A
4	N/A	N/A	.030A

Note 1: All the above figures are the maximum allowable current, which may be drawn by external devices connected to the TS-12.  
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.

11. REMOTE TROUBLE - OPTIONAL:

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 shall transfer.

12. REMOTE ALARM ANNUNCIATOR:

The TS-12 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. 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. When using just Zone 1 cut J 1. When using all 4 zones cut J 1, J 8, J 11, J 14.

CONNECT THE RZA AS FOLLOWS:

<u>RZA</u>	<u>TS-12-1</u>	<u>TS-12-4</u>
C	Term (3)	Term (3)
1	Term (6)	Term (6)
2	N/A	Term (17)
3	N/A	Term (22)
4	N/A	Term (27)

13. EXPANSION FROM ONE ZONE TO FOUR ZONES:

The TS-12-1 single zone panel is field expandable to four zones by installing the 3-ZDM module. The 3-ZDM is supplied with an installation diagram and complete wiring instructions. (Hardware included) (Refer to DWG. #12-180-1001).

14. CODED OPERATION:

When using coded initiating devices a corresponding jumper must be cut on the zone (s). (Refer to DWG. #12-100-1001 for jumper locations).

15. 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 will occur.

16. WIRING RESISTANCE CHART:

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

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

17. TROUBLE SHOOTING:

<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.	1. Failure of 110 VAC. 2. Failure of Power Supply. 3. Failure of 4A Fuse	1. Check 110 VAC Supply. 2. Check power supply fuse. 3. Check 12 VDC output w/ batteries disconnected.
2. Ground fault L.E.D. on	1. Field Wiring shunted to ground.	1. Remove all field wiring from control panel. With your ohmmeter check each wire with respect to earth ground. There should be no continuity between wiring and earth ground.
3. Signal circuit fault L.E.D. on and system trouble sounding.	1. Open on signal circuit wiring. 2. Defective signal circuit fuse.	1. Remove wiring from terminals 7 and 8. With your ohmmeter connected to these wires you should read 220 ohms $\pm 10\%$ . 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. 2. Replace fuse if defective.
4. Any zone trouble L.E.D. on and system trouble sounding.	1. Open in detection loop field wiring. 2. Relay - unplugged or coil open: K1 (Zone 1) K1 (zone 2) K2 (zone 3) K3 (zone 4) 3. Zone silence switch off normal. 4. Remote L.E.D. and/or field wiring open. 5. Zone alarm L.E.D. open.	1. Remove wiring from zone. Measure wire with your ohmmeter you should read 3900 ohms $\pm 10\%$ . 2. Check coil of relay. You should read 180 ohms $\pm 10\%$ . 3. Return switch to normal. 4. Check for continuity with your ohmmeter. 5. Cause an alarm on this zone. If L.E.D. won't come on, replace L.E.D.

# TYPICAL INSTALLATION LAYOUT — FIRE

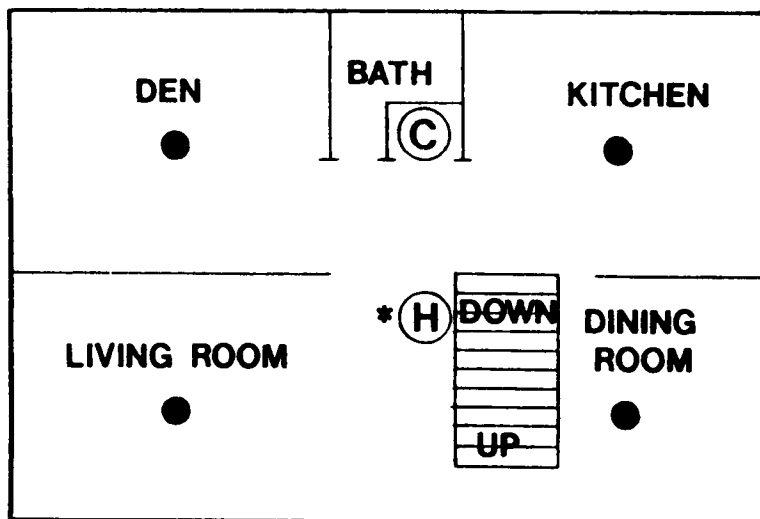
## NOTE:

ALTERNATE LOCATIONS MAY BE REQUIRED FOR THE DEVICES INDICATED BELOW.\*

## OPTIONS

OPTIONS WHICH PROVIDE FOR REMOTE SIGNALING MAY BE ADDED QUITE SIMPLY. CALL YOUR INSTALLING COMPANY FOR DETAILS.

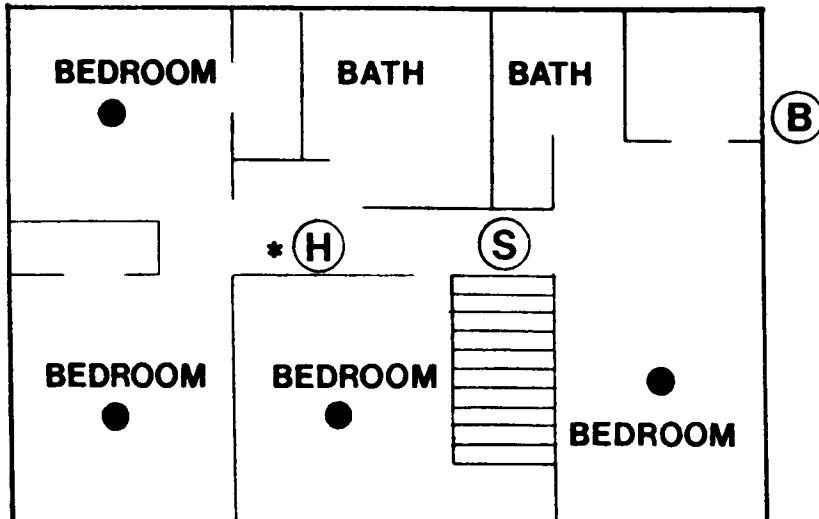
## FIRST FLOOR



## LEGEND

- Ⓢ - CONTROL
- Ⓜ - HORN
- Ⓟ - BELL
- Ⓢ - SMOKE DETECTOR
- - THERMOSTATS

## SECOND FLOOR



## IMPORTANT INFORMATION

PREPARATION & EDUCATION ARE OF PRIME IMPORTANCE IN FIRE PREVENTION... ESTABLISH A HOUSEHOLD EMERGENCY EVACUATION PLAN IN THE EVENT OF FIRE:

1. Evaluate possible escape routes from your home.
2. Select 2 escape routes from each room.
3. Rooms on the second floor should have a rope ladder. (Be sure it will reach the ground.)
4. Draw a rough sketch of your escape plan so that everyone is familiar with it.
5. Practice your escape plan to assure that everyone knows what they have to do.
6. Establish a meeting place outside where your family is to report.
7. Advise the local fire authority that you have installed a fire alarm system. Enter their phone number here: \_\_\_\_\_

## CAUTION:

Early warning fire detection is best achieved by the installation of fire detection equipment in all rooms and areas of the household as follows:

A smoke detector installed in each separate sleeping area (the vicinity of, but outside of the bedrooms), and heat or smoke detectors in living rooms, dining rooms, bedrooms, kitchens, hallways, attics, furnace rooms, closets, utility and storage rooms, basements and attached garages.