No.453 REMOTE ULTRASONIC MONITOR

GENERAL INFORMATION

The No. 453 Remote Ultrasonic Monitor is for use with one or two ultrasonic detectors such as those in the No. 450 and 454 series and the No. 351 (instructions for using the No. 453 with the No. 351 accompany the No. 351). The No. 351-12 is not included.

The No. 453 can be located anywhere in the protected premises to provide a visual indication of turbulence and motion present in the area protected by each detector. A latching feature permits confirmation and pinpointing of an ultrasonic alarm condition.

The No. 453 can be installed permanently or used temporarily as an aid during installation or subsequent testing of the detector(s). Take-off points indicated in Diagrams 1 and 2 permit an optional chart recorder (SCR-3) to be connected to provide a continuous printed record of ultrasonic alarm and turbulence conditions in the protected area (early production of No. 453's did not have these take-off points).

IMPORTANT: Only No. 453's with two YELLOW jumpers on their PC boards (See Diagram I) may be used to monitor "B" version ultrasonic detectors in the No. 450 and 454 series. (identified by a "B" on their labels). Other detectors may be monitored if both YELLOW jumpers are cut. See Diagram 1. (Early production No. 453's did not have YELLOW jumpers)

DESCRIPTION

The No. 453 contains two meters and LED's (one for each of two ultrasonic detectors that may be monitored) and a two position switch.

Meters:

Each meter continuously indicates the level of turbulence or motion present at any moment in the area being monitored. The meter scale is divided into three portions: BLACK, GREEN and RED.

<table>
<thead>
<tr>
<th>Meter Scale Division</th>
<th>Disturbance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLACK</td>
<td>Little or none</td>
</tr>
<tr>
<td>RED</td>
<td>*Excessive (Possibility of Alarm)</td>
</tr>
<tr>
<td>GREEN</td>
<td>Alarm</td>
</tr>
</tbody>
</table>

*Readings consistently in the RED may indicate excessive turbulence or motion in the protected area, or that the detector's sensitivity setting is too high. An alarm may occur at the upper end of the RED.

LED's and Switch:

The two position LED switch at the side of the unit provides a choice in the action of the LED's, as follows:

FOLLOW position: A Zone's LED will light while the ultrasonic detector for that zone is tripped and will be off when there is no disturbance.

LATCH position: A zone's LED will light when the ultrasonic detector for that zone trips. The LED will stay lit steadily, even after the disturbance clears, until the LED switch is moved to the FOLLOW position.
INSTALLATION AND WIRING

Remove the two screws that hold the cover in place. Two mounting holes are provided at the rear of the unit.

Make wiring connections as shown in the diagram. Openings for the wiring are provided in the base and the cover.

Note: PAY PARTICULAR ATTENTION TO THE DIAGRAM NOTES ABOUT:

- YELLOW JUMPERS.
- Powering unit with individual transformer.
- Jumping out unused zone terminals.
- Not disturbing the potentiometer adjustment.

SPECIFICATIONS

Physical:
- Width: 5-1/4" (13.3 cm)
- Height: 2-1/2" (6.4 cm)
- Depth: 1-1/4" (3.2 cm)

Electrical:
- Voltage: 12V. AC from No. 1320 Plug-in Transformer (supplied)

Note: Separate transformer must be used to power the No. 453. Do not power from transformer connected to ultrasonic detectors (or other equipment) or circuit burnout may occur.

Input impedance of any equipment other than the SCR-3 connected to "chart recorder" take-off points should be 10K ohms or more.

NOTE: DO NOT DISTURB FACTORY ADJUSTMENT OF POTENTIOMETER INSIDE UNIT.

NO. 1320 TRANSFORMER, PLUG INTO 110V. AC, 24 HR. OUTLET

NOTE: USE INDIVIDUAL TRANSFORMER. DO NOT POWER ULTRASONIC DETECTORS OR OTHER EQUIPMENT FROM SAME TRANSFORMER OR CIRCUIT BURNOUT MAY OCCUR.

NOTE: PLACE JUMPER ACROSS ZONE TERMINALS IF NOT USED.

DIAGRAM 1: FIELD CONNECTIONS

*YELLOW JUMPERS LEAVE INTACT when monitoring "B" version No 450 and 454 series units. CUT BOTH with all other units. IF NO JUMPERS ARE PRESENT, this unit cannot be used with "B" version No. 450 and 454 series units.
Diagram 2: Connection of Optional Chart Recorder

- No. 453
- Zone 2 "GND"
- Zone 1 "GND"
- Connections for Zone 2 instead
- Event notation, if used, requires 9-12 V DC to actuate (120 mA at 9V.)
- SCR-3 Chart Recorder
- Plug into 110 V AC 60 Hz
TROUBLESHOOTING No. 453

TROUBLE 1: METER(S) FAIL TO INDICATE WHEN ATTACHED DETECTORS ARE PICKING UP MOTION.

PROBABLE CAUSE

A. Attached Ultrasonic Detectors are not properly set up.

B. Wiring between all units not properly attached; wiring may be open or shorted.

C. No power to unit. Check for presence of 12 V. AC across power input terminals.

REMEDY

A. Review ADJUSTMENT AND TESTING procedures found in the Installation Instructions. Adjust sensitivity as required.

B. Check wiring against diagram; check for missing or shorted wiring. Correct as required.

C. Check to see if No. 1320 Transformer is securely plugged into a 24 hour non-switched AC outlet.

TROUBLE 2: METER(S) ALWAYS INDICATE HIGH IN RED ZONE OR IN GREEN ZONE (ALARM CONDITION).

PROBABLE CAUSE

A. Ultrasonic Detectors not properly adjusted (the problem may be due to the turbulence warning system indications).

B. Wire(s) cut or broken between detector and No. 453.

REMEDY

A. Readjust sensitivity control(s) of attached detector(s). See TURBULENCE WARNING SYSTEM for particular Ultrasonic Detectors involved.

B. Check wiring. Remember to jump out unused zone terminals on the No. 453. Repair as required.

TROUBLE 3: AN INDICATING LED REMAINS LIT AT ALL TIMES.

PROBABLE CAUSE

A. LED switch in "LATCH" position.

B. Ultrasonic detector(s) not properly placed, picking up air turbulence or high pitched ultrasonic "noise".

C. In the case of using only one ultrasonic detector, the unused zone is not jumpered out.

REMEDY

A. Move switch to the "FOLLOW" position. Wait for meter to move back to the BLACK zone. The LED should extinguish.

B. Relocate detector(s) if in a high-turbulence area. Adjust sensitivity or re-aim as per instructions if unit is picking up mild turbulent effect.

C. Install jumper across GND and SIG terminals of the unused zone. See Diagram 1 NOTE.

NOTE: REMINDER—To be assured of proper functioning of No. 453, be sure you are aware that:

1. If your No. 453 is an older unit (no YELLOW jumpers included) it CANNOT be used with the "B" Version Nos. 450 and 454 units.
2. Leave YELLOW jumpers INTACT when monitoring the "B" Version Nos. 450 and 454 units.
3. Cut both YELLOW jumpers when monitoring all other units.
NOTES ON NOS. 450 AND 454 ULTRASONIC DETECTORS
(B VERSION)

The CONCEPT 450 series of Ultrasonic Intrusion Detectors has been both expanded and improved in what is known as the "B" version. The new series of the Nos. 450 and 454 Ultrasonic Intrusion Detectors incorporates a 6 volt DC unit which can be powered from an Alarm Processing Center, Deluxe Control or Combination Control having a suitable rechargeable power supply.

In addition, all the new 450 and 454 detectors have improved sensitivity and crosswalk response for better catch without sacrificing the immunity to false alarms which was the hallmark of the original 450 and 454. When used in conjunction with a control which has the ability to indicate its armed/disarmed status with a switched DC voltage, you can select:

1. WALK TEST LIGHT DISABLE AT NIGHT
2. ALARM MEMORY
3. SILENT RELAY DURING THE DAY
4. TRANSMITTER SHUT-OFF DURING THE DAY

The switched voltage to indicate the panel status may be provided over a single pair of conductors from any Alarm Processing Center (except No. 1030); Deluxe Controls Nos. 1000, 1003, 1005, 1020; and Combination Controls Nos. 330R, 332R, 340R, and 342R. The Nos. 450 and 454 use the voltage from the panel, or from a No. 688 Switching Module connected to the panel, to determine their "day" and "night" operating modes.

1. WALK-TEST LIGHT DISABLE AT NIGHT

By cutting a single jumper, the walk test LED can be disabled when the panel is armed. If an intrusion occurs, the relay will signal an alarm with no visual indication (to the intruder) that an alarm has been registered.

In the "DAY" mode (when the panel is DISARMED), the walk-test LED functions normally, indicating that the detector is functioning properly.

2. ALARM MEMORY

By cutting two jumpers, the installer adds individual Alarm Memory to the night LED disable function. If an intrusion occurs while the system is armed, there is still no visual indication to the intruder that the relay in the 450 or 454 has signalled the alarm. The fact that there was an alarm is stored in the memory of each detector which sensed an intrusion.

When the system is disarmed, those detectors which have no stored alarm information will display normal walk-test indication. On any detector which signalled an alarm, the LED will illuminate at this time and remain on to allow the subscriber (or person responding) to walk through the areas and quickly identify those areas in which an intrusion occurred without changing the memory status.

The alarm memory indicators will remain on until the memory is cleared by momentarily re-arming the control panel. The LEDs will then function normally as walk-test indicators.
3. SILENT RELAY DURING THE DAY

Should the sound of the alarm relay during the "day" (disarmed) period be annoying to the subscriber, the capability exists of silencing the relay while in the disarmed state. Simply connect the switched voltage to the unit and the relay will automatically be locked in standby during the disarmed period, but will be fully active when the system is armed.

The subscriber (or installer) will still have a visual walk-test indication but there will be no signal to the protective circuit that motion is present while the system is disarmed. When the system is armed, the relay functions normally. During the disarmed period, the relay is locked into the "silent" mode.

4. TRANSMITTER SHUT-OFF DURING THE DAY

On occasion, interference problems with television remote controls has been encountered, which led to less than ideal field modifications.

Now, by cutting a pair of jumpers, the transmitter(s) can be shut off automatically whenever the panel is disarmed. The alarm relay will be locked-in and thus walk-testing cannot be done while the transmitter is off. The LED will display only alarm memory indications.

When the system is armed, the transmitter comes on, and the detector functions normally.

REMOTE LED INDICATION

On the DC powered detectors (both 6 V. DC and 12 V. DC), a single home run wire may be connected to a remote LED indicator. This LED will exactly duplicate the function of the detector LED, indicating present motion and alarm memory status (if selected as an option).

POWERING THE D.C. DETECTORS

The new 450-6 and 454-6 draw 90 ma., while their companions, the 450-12 and 454-12 draw 48 ma. They may be powered from any panel which can provide filtered DC with adequate current capacity. When selecting remote powered 6 V. or 12 V. DC units, one central power supply can be used for the entire system.

<table>
<thead>
<tr>
<th>CONTROL</th>
<th>CONTINUOUS CURRENT</th>
<th>MAX NUMBER OF 6 V. DC ULTRASONICS POWERED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1022</td>
<td>150 ma</td>
<td>1</td>
</tr>
<tr>
<td>1023</td>
<td>350 ma</td>
<td>3</td>
</tr>
<tr>
<td>1024</td>
<td>200 ma</td>
<td>2</td>
</tr>
<tr>
<td>330R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>332R</td>
<td>-25</td>
<td>250 ma (No. 492)</td>
</tr>
<tr>
<td>340R</td>
<td>-50</td>
<td>750 ma (No. 493)</td>
</tr>
<tr>
<td>342R</td>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

There is still more than enough capacity in most of the panels to power the 6 volt ultrasonic detectors and still retain the capability to use a digital keypad and digital communicator.
USING THE No. 453 REMOTE ULTRASONIC MONITOR TO TROUBLESHOOT PROBLEMS

GENERAL PROCEDURE:

The No. 453 Remote Ultrasonic Monitor (recently retitled Ultrasonic Test Meter) can be used in conjunction with Nos. 351, 450, and 454 Ultrasonic Motion Detectors (but not No. 351-12) to locate problems which may cause false alarms. Each No. 453 has features which lend themselves to facilitating troubleshooting.

1. If false alarms are occurring in a premises and the Ultrasonic Detectors are suspect, attach a No. 453 (capable of monitoring two ultrasonic units), to the devices in question.

2. Observe the meters of the No. 453 to see if the turbulence level is not excessive. The meter pointer should remain in the BLACK area at all times when no motion is present. Turn on the air conditioning, activate telephone bells, start baseboard heating or allow for the occurrence of any high pitched sounds (like radiator valves) that might trigger false alarms.

3. Watch the meters of the No. 453. If at any time a meter pointer registers in the RED zone, corrective action should be taken. See the installation instructions for the particular detector as to placement and adjustment procedures, or relocate the detector(s) away from the noise problem.

4. If the source of the false alarm cannot be found by using the above procedures, leave the No. 453 LED SWITCH in the "LATCH" position. If, after a period of time an LED on the No. 453 remains lit, the particular ultrasonic unit corresponding to the lit LED was the unit that may have given the false alarm. Look into PLACEMENT and ADJUSTMENT PROCEDURES found in the particular installation instructions for the offending unit.

5. If available, a SONTRIX SCR-3 chart recorder can be used to troubleshoot difficult problems. It can be readily used with No. 453 units equipped with two stand-up resistors (see No. 453 installation instructions that follow). If attached according to the instructions, this chart recorder can record the time and intensity of particular disturbances which may ultimately cause a false alarm.