

# PATROL<sup>i</sup> - USL

## COMBINED ACOUSTIC & ULTRASONIC INTRUSION DETECTOR

DETECTS BREAKAGE  
OF WALLS, DOORS AND  
ALL TYPES OF GLASS

### INSTRUCTION MANUALS



**GSN** Electronic Company Ltd.

1

**PATROL-USL** combined acoustic and ultrasonic detector determines intrusion through walls, doors and all types of glass within protected area, in response to their destruction.

**PATROL-USL** with anti-mask technology detects any of the ultrasonic sensors masking attempts.

2

### FEATURES

- COMPLETE PROTECTION OF ALL TYPES OF GLASS, WALLS, DOORS
- INNOVATIVE METHOD FOR DETECTING ACOUSTIC SIGNALS
- DIGITAL SPECTRAL ANALYSIS OF SOUND AND ULTRASONIC FREQUENCIES
- DUAL ACOUSTIC & ULTRASONIC TECHNOLOGY
- TWO OPERATING MODES
- SEPARATE ADJUSTMENT FOR BOTH ULTRASONIC AND LOW-FREQUENCY SOUND CHANNEL SENSITIVITY
- BUILT-IN ANTI-MASK SYSTEM
- HIGH RFI/EMI PROTECTION
- AUTOMATIC GAIN CONTROL - ADAPTATION TO ENVIRONMENTAL CHANGES

3

### ALGORITHM

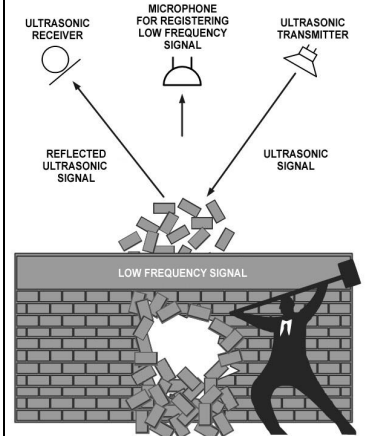
Dual-technology detector incorporates two physical means for determining intrusion: registering the low-frequency impact waves and registering the change in frequency of ultrasonic waves (Doppler Effect).

1. The low-frequency acoustic signal is emitted upon impact of glass, wall or door.
  2. The Doppler Effect occurs when the frequency of ultrasonic waves continuously emitted by the detector and reflected from different moving objects changes.
- See Figures 1, 2.

4

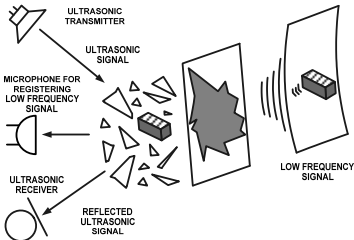
3. To activate the alarm, both low-frequency sound and ultrasonic signals must be successively sensed within a pre-determined time period.

**Figure 1**  
**Wall Breakage Detection**



5

**Figure 2**  
**Glass Breakage Detection**



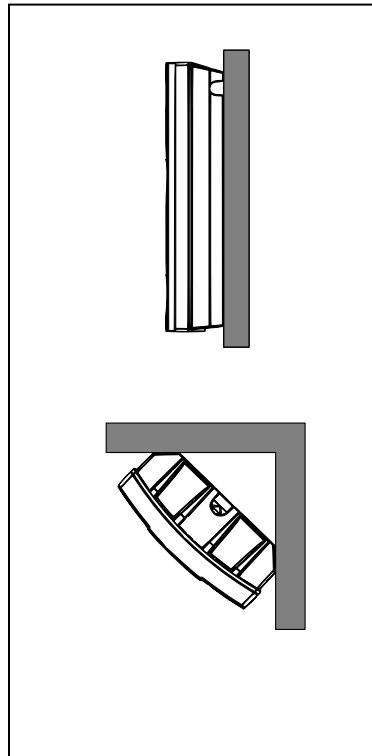
### DETECTOR INSTALLATION

1. Fix the detector vertically on solid, flat wall surface.

The installation height is 2 - 2.5 meters.

For corner installation, use knockouts located on the sloping part of the detector base.

6



7

For wiring, use the designated opening above the detector terminal block.

2. Connect the wires in accordance with the scheme.



### NOTE!

Several detectors of this type can be installed within the protected area, at a distance of at least 3 meters from each other.

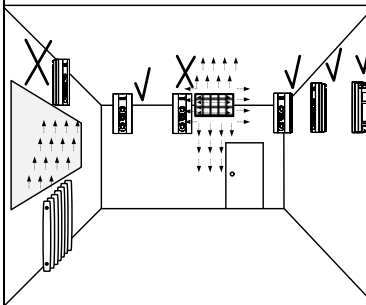
8

### INSTALLATION LIMITATIONS

- Do not install the detector on unstable or vibrating surfaces.
- Do not install the detector close to curtains, blinds or other items that vibrate with air movement.
- Do not install the detector close to air conditioners, air blast sources or above heat sources.
- Do not install the detector or route power wires and alarm loops next to high voltage cables.
- Do not install the detector near bells, sirens or electronic sounders within the premises where sound-pressure level exceeds 75dB.

9

### DETECTOR INSTALLATION OPTIONS



10

## DETECTOR TESTING AND ADJUSTMENT

1. Remove the front cover.
2. Set Jumper J8 to **MODE 2+** position.
3. Connect the power . red LED will blink. At the same time, keep the detector field-of-view clear, until the LED stops blinking . the anti-masking function will then be correctly activated. Anti-mask startup (boot) period is 30 seconds.

➤ If upon testing and detector adjusting, the red LED keeps blinking, it means the anti-masking function is activated. Turn off the detector and then turn it back on.

11

4. Test the ultrasonic channel operation.

- First of all, make sure there are no humans or animals within the protected area, windows are closed; air conditioners, fans and other possible sources of air flow are switched off.
- Walk into the detector field-of-view. The green LED should actively respond to your movement. If needed, increase the detector ultrasonic channel sensitivity using **J4 jumper (Ultrasonic Sensitivity)**.

12

- Stay for a while to make sure the green LED stops blinking, which means the detector ultrasonic channel is configured correctly! If the green LED keeps blinking, check the premises without interferences, as described above. If necessary, reduce the excessive sensitivity of the detector with jumper **J4 (Ultrasonic Sensitivity)**.

5. Test the low-frequency sound channel operation. To do this, gently tap the glass, door or gypsum wallboard with the palm of your hand. The yellow LED will light. Use the **J2 (Microphone Sensitivity)** jumper to adjust the detector's low-frequency sound channel sensitivity.

13

6. Simulate the alarm by gently tapping the glass/wall, and at the same time, taking a step towards the detector. The red alarm LED will light.

7. Set the desired operating mode using the **J8 (MODE)** jumper.

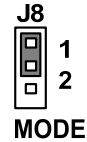
To operate the detector without light indication, remove the **J9 (LED)** jumper.

8. Replace the cover.

14

## DETECTOR OPERATING MODES

The detector **PATROL-USL** has two operating modes:



### MODE 1

For premises with stable environmental conditions.

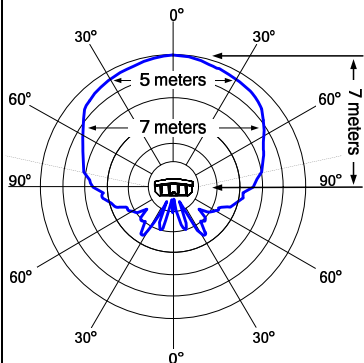
### MODE 2

To provide extra security measures for banks, safes, vaults, jewelry stores, pawn shops, museums and other facilities that store valuables.

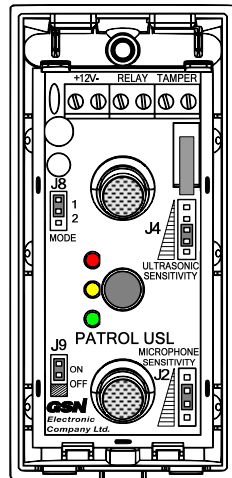
15

## PATROL-USL DETECTION ZONE

TOP VIEW



16



J2 . Low-frequency sound channel sensitivity adjustment

J4 . Ultrasonic channel sensitivity adjustment

J8 . Operating mode selection

J9 . LED On/Off

17

## TECHNICAL SPECIFICATIONS

Input voltage:.....9 - 16Vdc

Current consumption

In standby mode:ō ō ..43.2m

In alarm mode:ō ō ō ..48.3m

Warm-up period:ō .ō ō ...2sec

Anti-mask startup (boot) period:ō ō ō ō ō ō ō ...30±5sec

Alarm period:ō ō ...ō ō ...3sec

Anti-mask alarm activation delay:ō ō ō ō ō ō ō ō .....35sec

Ultrasonic channel operating frequency:ō ō ō ō ō ō .....40kHz

Installation height:ō ō 2 - 2.5m

Detection range:ō ō ō ō ō ō 7m

18

Maximum protected volume:  
ō ō ō ō .....200m<sup>3</sup>

Detection angle:ō ō ō ō ō ..170°

Relay output:ō ō ō ō ō ō ō ō ō ...  
ō ō ō ō ō NC; 60V; 120mA; 16ō

Tamper output:ō ō ō ō .NC; 10ō

Operating temperature range:..  
ō ō ō ō ō ō ō ō ō . 30°C to +70°C

Storage temperature range:ō ..  
ō ō ..... 50°C to +85°C

RFI immunity:ō ō ō ō ō ...30V/m  
at a frequency range  
10MHz - 2GHz

EMI immunity:ō ō ō ō 50000V

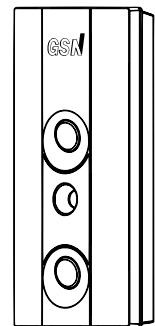
Dimensions:ō ō ō ō ō .ō ō ō ō .....  
.....105mm x 50mm x 22mm

Weight:ō ō ō ō ō ō ō ō ō ō ..80g

19

## WARRANTY

GSN Electronic Company Ltd. warrants the product to be free from defects in materials and workmanship under condition of observance of service regulations and to be repaired or replaced under absence of mechanical damages for a limited period of five years from the date of sale.



P/N: USM0PATUSL\_ENG\_REV.A

20