

# NOISE CAMERA

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AUTOMATED TRAFFIC NOISE ANALYSIS SYSTEM



## ***FEATURES...***

The Noise Camera Analysis System is a completely new design, engineered from scratch. The system utilises cutting edge technology in order to bring video and audio analysis to a new level of real-world application. Through the use of two modern embedded computer systems housed in waterproof enclosures, the Noise Camera system is capable of continually recording road traffic noise and processing the noise signal for comparison against operator selectable trigger criteria whilst simultaneously collecting relevant video footage of the scene when a trigger occurs.

The system utilises three subsystems which communicate with each other using wireless Ethernet technology, the Video Processing subsystem (which provides a “scene” view across up to six lanes of traffic, and a “zoom” view of a single lane, with sufficient resolution to read a number plate), the Noise Processing subsystem (which continuously records and analyzes the ambient noise in accordance with AS-1259.1 - 1990 Type 1 specifications) and the System controller, which provides the system operator with a user friendly interface to configure and monitor the system in real-time. The system operator may simultaneously view live video streaming from the “scene” and “zoom” cameras, real-time SPL data (A, C and Linear weighted) and 1/3 octave data which is represented graphically.

The system uses a removeable hard drive which is sufficient to store more than 10,000 triggered events (24 hours of data if the trigger is continuously asserted), each containing 5-10s of high resolution video from two cameras, along with the digital recording of the noise. The hard disk can then be removed from the system and installed into a desktop PC and the data analyzed at high speed using the analysis software.

## ***STATE-OF-THE-ART TECHNOLOGY...***



### **The Noise Camera system consists of five hardware units as follows:**



**Noise Processor Unit.** The Noise Processor Unit consists of a wireless networked, embedded PC, encased within a double skinned metal container capable of being mounted on roadside pole (Stobie pole, power pole or such like). A simple mounting bracket is supplied to facilitate the fixing of the microphone. The unit is certified as a type 1 sound level meter in accordance with AS-1259.1 – 1990.

**Camera Processor Unit.** The Camera Processor Unit consists of a wireless networked, embedded PC with a removable hard disk drive and a wireless network base-station encased within a double skinned metal container capable of being mounted on roadside pole (Stobie pole, power pole or such like). Regulated power is also provided to the cameras directly from this unit.



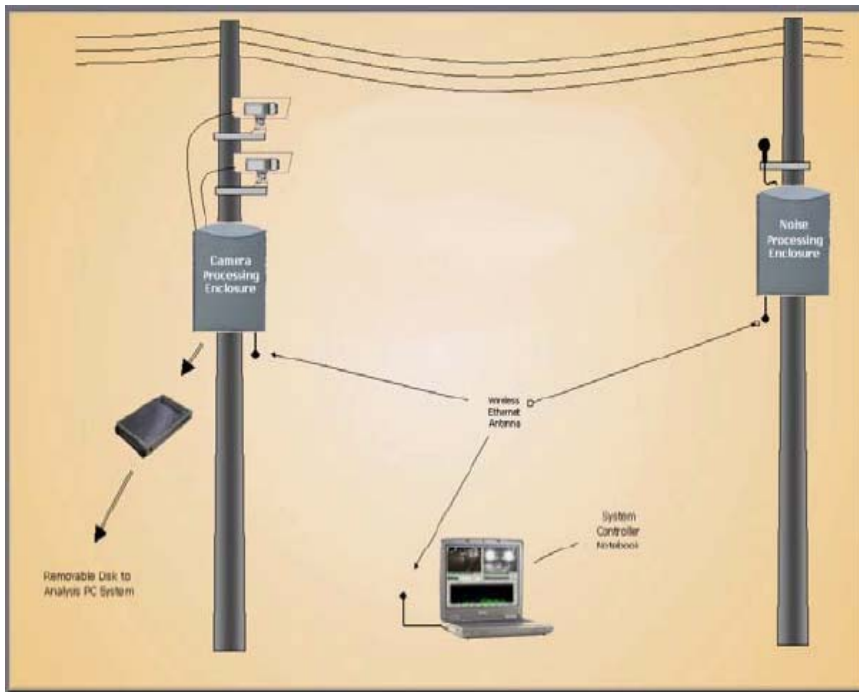
**Two Video Camera Units.** The Video Camera Units house a Scene Camera and a Close-up, or zoom, Camera. Each camera unit is provided with a mounting bracket to enable attachment to a roadside pole (Stobie pole, power pole or such like).

**System Controller Unit.** The System Controller Unit consists of a wireless network enabled laptop PC with appropriate software to permit control and monitoring of the Noise and Camera Processor Units.



**Spare Hard Disk Drive.** A spare hard disk drive, complete with USB2.0 enclosure is provided to facilitate swapping of the data HDD from the Camera Processor Unit and transfer of the data to a desktop PC for replay and analysis purposes.

## WIRELESS COMMUNICATION...



The camera processor, noise processor and system controller subsystems communicate with each other using wireless Ethernet, which means the system operator can completely control and configure the entire system without the need for a hard-wired connection to the system. In addition, this also means that no physical connection is required between the camera processing subsystem and noise processing subsystem for communication.

## POWERFUL USER INTERFACE...



The system controller notebook computer allows the system operator to view live video feed from both the scene and close up cameras as well as real time sound pressure level (A, C and Linear frequency weightings) and 1/3 octave or narrowband processed data or statistical data simultaneously, as well as functioning as a "front-end" for the Noise Camera system. Through the use of our powerful, windows based software, the system operator has complete control of the Noise Camera. However, the Noise Camera's functionality, once configured, is 100% automated until the need arises for parameters to be changed to suit changing user requirements.

## ***SPECIFICATIONS...***



Applicable Standards	AS1259.1-1990 (Type 1) AS1259.2-1990 (Type 1) AS4476- 1997 (Class 1)
Microphone	UC-53A Prepolarised Condenser (18pF equivalent capacitance)
Reference Direction	Along centre axis of microphone/preamplifier
Primary Indicator Range	40dB-110dB (A-Weighted) 45dB-110dB (C-Weighted) 45dB-110dB (All-Pass) 45dB-110dB (1/3 Octave Bands)
Reference SPL/Frequency	94dB/1000Hz
Flat Frequency Response	5Hz – 15000Hz (Nominal)
Frequency Weightings	A and C Weightings All-Pass 1/3 Octave Band Filters with the following nominal midband frequencies: - 25Hz, 31.5Hz, 40Hz, 50Hz, 63Hz, 80Hz, 100Hz, 125Hz, 160Hz, 200Hz, 250Hz, 315Hz, 400Hz, 500Hz, 630Hz, 800Hz, 1kHz, 1250Hz, 1600Hz, 2kHz, 2.5kHz, 3150Hz, 4kHz, 5kHz, 6.3kHz, 8kHz, 10kHz.
1/3 Octave Filtering System	Base Two
1/3 Octave Filtering Method	Digital Butterworth bandpass filters. The sample rates used in analogue to digital conversion are 48000Hz, 4800Hz and 480Hz.
Filter Set Reference Attenuation	0dB
Time Weightings	F, S, I, 5ms
Temperature Coefficient	+0.005dB/°C at 250Hz
Humidity-dependent Sensitivity change	≤0.1dB (at 250Hz, RH below 95%, no condensation)
Operational Temperature Range	5°C to 40°C
Operational Humidity Range	0 to 95% Relative Humidity.
Warm-up Time	5 minutes

Acoustic Research Laboratories reserves the right to change specifications without notice.

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