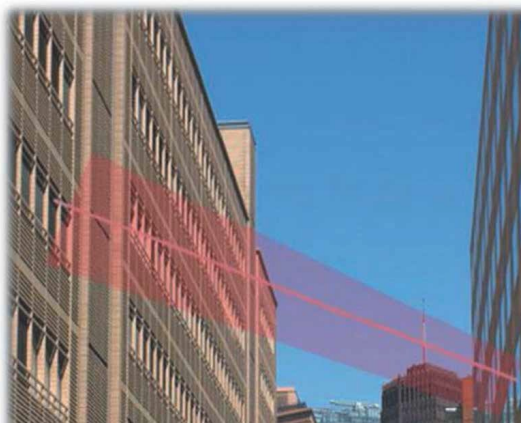
Laser Microphone

The Laser microphone is intended for audio surveillance on large remote distances.

DISTINCTIVE FEATURES

- Acoustic surveillance/observation up to 300m
- Verbal communication can be retrieved from materials such as metallic elements, cloths, paper and plastic.
- Can operate from any angle
- Easy to use
- Fast and simple start to work and target aiming
- The unit is safe for the eyes and totally stealth
- Noise robust, no interference from surrounding noise
- Requires the minimum vibrating of surfaces to allow surveillance via windows, f.e. in vehicles, rooms, etc.



HIGHLIGHTS

- Operates via window/small openings
- No physical entering needed for installation
- Can operate with any target surface
- Highest level of speech intelligibility
- Requires just 12VDC for operation

OPERATION SCENARIO

The unit provides a range of benefits for those in the field who need to perform surveillance. The device uses the unique interferometric laser technology, which makes it a top choice for this type of work. It features an unseen infrared laser along with advanced DSP technologies. This allows for great speech detection and speech intelligibility even when the operating in noisy environments.

This device has the ability to detect vibrations caused by speech at various angles and on many surfaces. It does not matter if the targets are inside the building (office, apartment, etc) or outside. The backscatter laser light frequency shift makes it possible for the speech to be extracted. This makes the technology fully robust to various surfaces and laser intensity.

The unit has a fantastic operating range with minimum laser power, providing high performance surveillance, while still being safe. The device also happens to be quite easy to use.

APPLICATION

The unit is used to perform surveillance and record speech of a person who might be up to 300m away, in a vehicle, building, or elsewhere. The microphone picks up on surface vibrations, and it has the power to do all of this independent from the target optical conditions.

The laser is unseen by human eyes or common cameras. This allows users to target those in closed rooms through windows. During operation the system eliminates ambient interferences, noises.

HOW IT WORKS

The sensor can collect the vibrations in various surfaces, as mentioned. It can detect speech, and the best sensitivity occurs when objects are thin, soft, or lightweight. Some of the targets that could be used include papers, leaves on a plant indoors, pictures hanging on a wall, seat cushions, window panes, and clothing. The beam detects vibrations, turns them into an electrical signal and then amplifies them and creates an audible output.

The vibrations, caused by a speaker, cause a backscatter laser light frequency (Doppler) shift. This shift is then extracted from the laser light. After that, the signal will pass through decoding and convertion to standard audio signal.

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THE SYSTEM

It features two components: the infrared laser sensor and the monitor unit.

INFRARED LASER SENSOR

The device includes a laser source in the sensor, which meets eye safe laser Class 1 to prevent eye injuries, a precision interferometer, an inline and parallax-free color camera. It can be used to target and transmit, as well as receive long range optics. Manual fine adjustment is available for the laser focus for targets between 15m and 300m away.

MONITORING UNIT

The processing unit is responsible for decoding interferometer signals to audio compatible signal paths. An analogue/digital/S/PDIF signals available as phone output and as a line jack to connect common audio recording and filtering units.

The sound level protection is achieved by using headset. The device has three sensitivity levels, which can be used as a means to optimize signal quality. Frequency bandwidth can be limited by special filters for obtaining good quality speech intelligibility. The unit features an inbuilt camera. Also an audio-video signal is available at a special headset connector. This allows operation of the supplied video glasses.

TARGET AIMING, ADJUSTING AND FOCUSING

Fast setup and target aiming is essential. Fortunately, the unit features all of the accessories needed, and it is all in a simple to set up and use system. It is possible to install the infrared laser sensor on a tripod and aim the laser accurately. The above mentioned features can help users to get their system set up quickly and effectively.

VISUAL SIGNAL

The in-built video camera with the laser delivers a color image of the target zone with a central scale grid that matching with the laser. When the image in the glasses is in focus, it means the laser is in focus. You can adjust the focus to get it just right by using the focus ring on the lens. In cases where the light levels happen to be low, it is possible to use a mechanical interface on the sensor to adapt to a night vision scope.

AUDIO SIGNAL

After localization and focus of the target are acquired, the signal quality can be optimized. Scan for the best vibrating surface in the target zone. You can use the glasses or headphones, to help you adjust and perfect the audio signal.

When you utilize both the audio and the visual feedback at the same time, you will find that it allows you to find the targets faster and more effectively, and to get everything into proper focus. Overall, this tends to be a very easy system to utilize.

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TECHNICAL DATA AND SPECIFICATIONS			
Sensor Laser			
	Laser 10	Laser 18	Laser 35
Laser type	Erbium fiber	Erbium fiber	Erbium fiber
Wavelength	1 550nm	1 550nm	1 550nm
Laser class	1	1	3
Emitted laser power	< 10mW	< 18mW	< 35mW

Operating Temp	From +5 to +40°C	Dimensions	60x 54,3 x 16,7 cm
Storage Conditions	From -10 to +65°C	Dimensions	63,3 x 17,9 x 28,4 cm incl. lens shade
Relative Humidity	max. 80%, non-condensing		
Protection Level	IP40	Weight with lens	Appr. 10 kg

Controller			
Voltage	AC adaptor: 100-240 VAC, 50-60Hz Connection: 12-4VDC	Protection level	IP40
Current Consumption	50W	Dimentions	22,5 x 36x 13,5cm
Fuses	2,0A	Weight	6kg
Protection Class	1 (protective grounding)	Operating temp	From +5 to +40°C
		Storage conditions	From 10 to +65°C
		Relative humidity	max. 80%, non-condensing

Optics		
	LRL- Lens 300mm	Motorized, 12 VDC motor, incl. controller
Max. Distance	300m+	300m
Closest View Limit	15m	15m
Focusing	Manual	motorized
Focal Length	150mm	300mm
Video Camera	1/ 4CCD Color Camera, PAL, ≥ 460 TV lines, 765 x 582 pixels, automatic shutter, minimum illumination: < 1lux	
Laser Safety	IEC/EN 60 825-1:2 008-05	
Electrical Safety	IEC/EN 61 010-1:2 002-08	
Safety of Laser Products	Complies to US 21 CFR 1 040,10 and 1 040,11	
EMC	IEC/EN 61 326-1:2 006-10	
Immunity	IEC/ EN 61 000-4-2 to 61 000-4-6 and IEC/EN 61 000-4-11	
Maintenance	Once per two years	
Emission	Limit Class B IEC/ EN 61 000-3-2 and 61 000-3-3	
Vibration Reliability Tested	According to EN 60 068-2-6 (IEC 68-2-6)	
EMC requirements on Emission and Immunity	Electrical equipment for measurement, control, and use in the lab	

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Outputs Digital Outputs			
S/PDIF Electrical	Front Panel	S/PDIF Optical	Back Panel
Data format	S/PDIF	Data format	S/PDIF
Sample rate	48 kSa/s	Sample rate	48 kSa/s
Resolution	24-bit	Resolution	24-bit
Jack	RCA	Jack	TOS LINK

Analog Outputs			
LINE OUT		HEADSET	Video/audio out
Voltage Swing	max. 4V pp	Audio signal	max. 100 mW/ 32Ω
Output Impedance	620	Video signal	PAL
Jack Type	RCA	Jack type	3,5mm

PHONES	Output for headset	VIDEO	Output for the video signal
Output Power	100mW/ 32Ω	Video signal	PAL
Jack	3,5mm	Jack type	RCA

Velocity	Signal voltage output	RSSI	Output for a DC voltage signal
Voltage Swing	10,0V pp	Voltage range	0V to +5V
Output Impedance	50,0Ω	Load resistance	10,0kΩ
Load Resistance	10,0kΩ	Jack	BNC
Over Range Indicator	9,5V		
Jack	BNC		

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UPGRADE WITH REMOTE

1. Pan and Tilt Module
2. Video and Audio Transmission Module
3. Remote Controller Module

TX/RX SYSTEM

High Speed COFDM store and forward transmission system for video/audio

MAIN FEATURES

- Operating frequency 300 Mhz, 800 Mhz, 1,2 Ghz, 2,4 GHz (up to 3GHz)
- Output power 100/150/250/1 000 mW + optional PA 10Watt
- 64GB in-built memory (48 hrs max)
- H264 Video Recording (RF transfer/real-time)/COFDM (up to 19 MBit/sec)/AAC audio (up to 128 kbit/s)
- RF bandwidth (up to 19 MHz)
- Various video modes
- Anti jammer feature
- AES encryption (option)

VIDEO RECEIVER

COFDM store and forward system for video and audio

MAIN FEATURES

- 2X or 4X diversity
- TFT/OLED screen
- RF remote control/download
- Various video modes
- USB 2.0/LAN/IP or 3G transmission
- AES decryption (optionally)

Microphone Remote Location
Operating Scheme

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TX

Microphone Transmitter

- Video / Audio / IP Input 64GB onboard flash
- Transmission: up to 128 kBit/sec;
- Frequency: 300 Mhz/800 Mhz/1,2 Ghz or 2,4 GHz
- COFDM Data: up to 19 MBit/sec
- RF Bandwidth: up to 6,7 MHz
- Memory: 64 GB
- Power: 1 or 2W
- Power Supply: 6-32VDC/7,5 W
- Dimensions: 11,3x9,1x2,1 cm
- Weight: 300g

RX

Microphone Recever

- USB HDD Recording + PC Interface
- RS 232 / Ethernet / IP
- TFT screen 8'
- Diversity: 4X
- Frequency: 300 Mhz/800 Mhz/1,2 Ghz or 2,4 GHz
- COFDM Data: up to 19 MBit/sec
- RF Bandwidth: up to 6,7 MHz
- Recording: 64 GB (48 hrs max)
- Dimension: 21,5x16,5x 2,9 cm
- Weight: 1,38 kg.
- PSU: 9-18 VDC / 8,5 W

FFS

Microphone PTZ Cameras Handheld Controller

- Remote Controller - handheld controller for PTZ cameras

OPT

PT for microphone

Ordering Information	
1	Microphone 10mW, eye safe, 1 550nm, , Long-Range-Lens 300mm motorized, 12VDC incl. Controller, Monitor, Tripod, Transport case
2	Microphone, 18mW, laser class 3R, 1 550nm, Long-Range-Lens 300mm motorized, 12VDC incl. Controller, Monitor, Tripod, Transport cases
3	Microphone, 35mW, laser class 3R, 1 550nm, Long-Range-Lens 300mm motorized, 12VDC incl. Controller, Monitor, Tripod, Transport cases
4	Upgrade motorized PT, motorized fine tuning PT, Tripod, Remote controller, digital video/audio system TX+RX OLED
5	Real-time filter for digital microphone audio raw data -Equipped with 2 independent digital recorders for the raw signal (digital recording) and the filtered signal (analog) with time stamp, 19" rack
6	Laser safety glassed for protection against 1 550nm infrared laser light, high quality model with a transmittance of 75% for visible light.