

# How to Use Audio-in of ACTi Cameras

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## Introduction

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A recorded sound from the camera site is a valuable addition to video evidence; therefore ACTi has focused on providing total solution that supports both video and audio.

It is good to know that ACTi NVR fully supports the audio function – it is possible to hear the audio from the camera site right in ActiveMonitor, so the guard can have better overview of the situation on the scene. Furthermore, it is possible to hear the audio during the playback of the video clip with ActivePlayer, and even export it as AVI file.

Sometimes it is possible for crime investigators to solve case only thanks to the audio support of the surveillance camera.

Audio-in can also be used for purposes other than crime investigation, for example intercom at the entrance, baby day care center, etc.

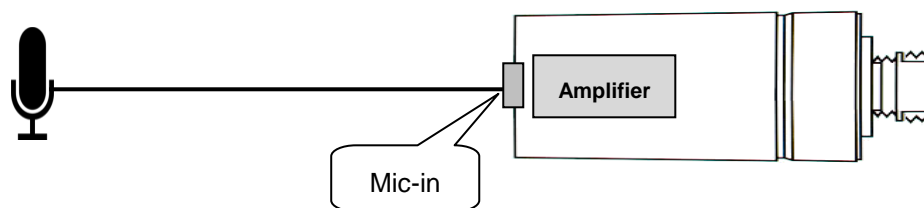
## Types of Audio-in

In order to hear the sound of the camera site clearly, the signal from the microphone has to be amplified either inside the microphone or inside the camera. The microphones with built-in amplifiers are called “active microphones” while the ones without the built-in amplifier are called “passive microphones”. Active Microphones require additional power supply.

### Type 1: A passive microphone connected to Mic-in connector of the camera



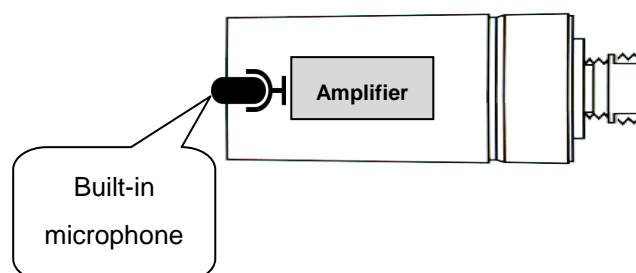
This is technically correct solution; **ACTi product coverage:** N/A



### Type 2: A built-in microphone with amplifier



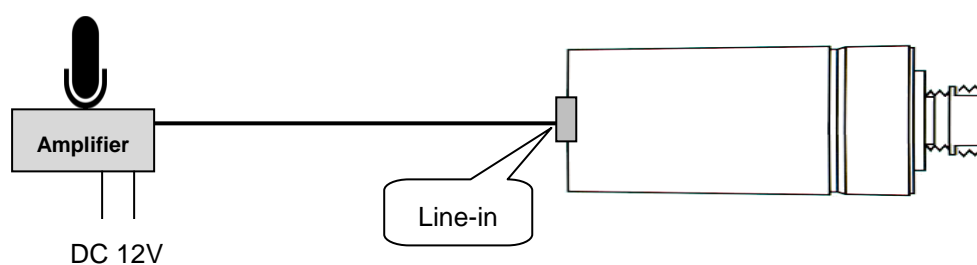
This is technically correct solution; **ACTi product coverage:** Cube cameras



### Type 3: An active microphone connected to Line-in of the camera



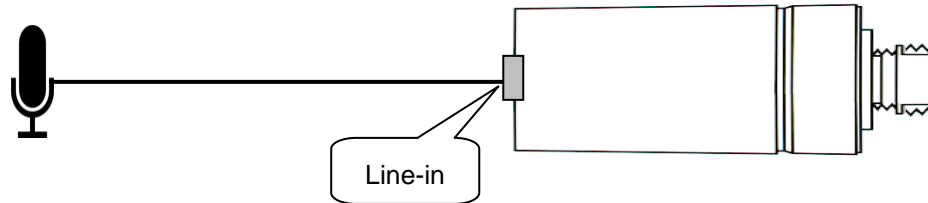
This is technically correct solution; **ACTi product coverage:** Box, Dome, Bullet, PTZ cameras



#### Type 4: A passive microphone connected to Line-in of the camera



This is technically incorrect solution; Because of missing amplifier, the sound will be too weak or not heard at all.



### How to Connect an Active Microphone into Line-in

Typically, an active microphone comes with certain audio connector attached to it as well as with the DC power adaptor.

The voltage of the power supply for the active microphone does not really matter as long as you are going to use the power adaptor that comes with the package of the active microphone.



However, if your intention is to build a pure PoE-based camera solution, then you would not want to hassle with additional power supply just because of the microphone. **With ACTi DI/DO supported cameras it is possible to use the power supply of DI/DO system of the camera to feed the active microphone!** Most of ACTi DI/DO systems in the camera provide DC 12V power, therefore please keep that in mind while choosing the active microphone – **make sure it is working with DC 12V power supply.**

Once you have obtained the DC 12V active microphone and you want to make it work by using the power supply of DI/DO of the PoE-powered camera, then you might need to cut off the existing connectors for both audio signal and power because you are not going to be needing them any more – the wires will be connected directly to the terminal block of the camera.



You can see the example of the TCM-3511 camera: the two wires that transfer audio signal are connected to the pins "A\_IN" and "AI\_GND"

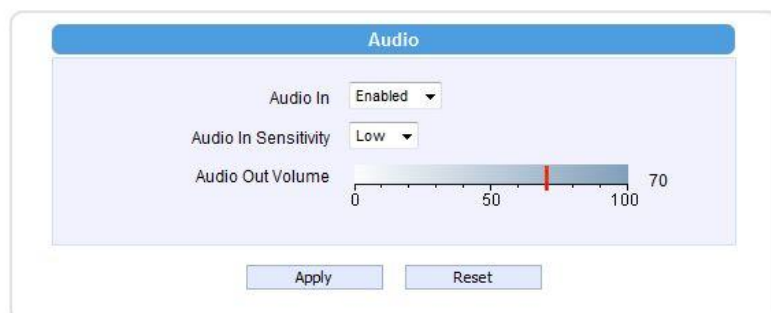
whereas the two wires of power supply are connected to the pins "DIO PW" and "DIO GND" of the terminal block. **Please note that the power circuit connected this way will work continuously regardless of the DI and DO levels.**

This is the typical installation of the microphone – the head of the microphone sticks out of the side hole of the dome camera.



One last thing to notice – make sure that audio-in is enabled in the camera. Speaking of sensitivity, there are two choices in the firmware – low and high. In most cases, "low" would be the best setting

because most active microphones are very sensitive. The microphone in this example works best with "low" sensitivity, too.



## The List of ACTi Cameras Supporting Audio-In

Below is the list of ACTi cameras supporting audio-in. You may notice that all those cameras come either with built-in microphone or with line-in connector.

### Cube Cameras:

Model	Camera Type	Built-in Microphone	Line-in with 3.5 mm Phone Jack	Line-in with Terminal Block
ACM-400x	Cube	Y		
TCM-4101	Cube	Y		
ACM-420x	Cube	Y		
TCM-4301	Cube	Y		
TCM-4001	Cube	Y		
TCM-4201	Cube	Y		

### Dome Cameras:

Model	Camera Type	Built-in Microphone	Line-in with 3.5 mm Phone Jack	Line-in with Terminal Block
ACM-30x1	Dome			Y
ACM-3311	Dome			Y
ACM-34x1	Dome			Y
ACM-3211	Dome			Y
ACM-3511	Dome			Y
TCM-30x1	Dome			Y
TCM-34x1	Dome			Y
TCM-3511	Dome			Y
CAM-73xx	Dome			Y
ACM-7411	Dome			Y
ACM-75x1	Dome			Y
TCM-7011	Dome			Y
TCM-7411	Dome			Y
TCM-7511	Dome			Y
TCM-7811	Dome			Y
KCM-7111	Dome			Y
KCM-7211	Dome			Y

**Bullet Cameras:**

Model	Camera Type	Built-in Microphone	Line-in with 3.5 mm Phone Jack	Line-in with Terminal Block
ACM-1311	Bullet		Y	
ACM-1511	Bullet		Y	
TCM-1511	Bullet		Y	
ACM-1011	Bullet		Y	
ACM-123x	Bullet			Y
ACM-143x	Bullet			Y
TCM-123x	Bullet			Y

**Box Cameras:**

Model	Camera Type	Built-in Microphone	Line-in with 3.5 mm Phone Jack	Line-in with Terminal Block
ACM-5001	Box		Y	
ACM-5711	Box		Y	
ACM-58x1	Box		Y	
ACM-56x1	Box		Y	
TCM-56x1	Box		Y	
CAM-52x1	Box	Y		
TCM-5311	Box		Y	
KCM-5111	Box		Y	
KCM-5211	Box		Y	
KCM-5211E	Box			
KCM-5311	Box		Y	
KCM-5311E	Box			

**PTZ and Speed Domes:**

Model	Camera Type	Built-in Microphone	Line-in with 3.5 mm Phone Jack	Line-in with Terminal Block
ACM-82x1	PTZ	Y		
ACM-8511	PTZ		Y	
CAM-6510	Speed Dome			Y
CAM-66x0	Speed Dome			Y
TCM-6610	Speed Dome			Y
TCM-6630	Speed Dome			Y

## Why Do ACTi Cameras Support Line-in instead of Mic-in?

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The difference between line-in and the mic-in is following:

1. **Line-in** is used to get audio signal from devices that have their own amplifier. The camera will not further amplify the incoming signal.
2. **Mic-in** (microphone-in) is used to get audio signal from a microphone that does not have an amplifier. The camera itself will amplify the signal.

While mic-in is common for consumer market products, **industrial products mostly use line-in**. The main reason is that industrial cameras may often be integrated with other professional audio devices, most of which contain their own built-in amplification system. If you connect an amplified system into mic-in that further amplifies the signal inside the camera, there is a risk of causing failure of the audio system of the camera because of extreme audio burst. Therefore, line-in is the most suitable solution as it supports wider range of products compared to mic-in.