



# REVIEW OF BAVIS DRIVE- THRU AUDIO SYSTEMS

Making drive-thru communications understandable!

## Abstract

Learn how E. F. Bavis and Associates, Inc. tackles communications in the drive-thru and offers convenience, time saving options and enhanced audio clarity that are not available from other suppliers!

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# Index:

Overview	3
Products Offered	3
The Bavis Audio System	3
What is Beam?	4
Telephone Audio	5
Benefits of Telephone Audio	5
Choosing a Telephone Interface	5
Technical Aspects of Telephone Audio	6
Hybrid Phone Systems	6
Digital (VoIP) Phone Systems	6
Audio Authority	7
Specialty Products	7
Conclusion	8
Questionnaire	9

# Bavis Drive-thru Audio:



*Bavis One on One Console*

## Overview:

E. F. Bavis and Associates, Inc. offers multiple drive-thru communications products for just about any drive-thru budget, application and environment. We strive to apply technology appropriate for every situation and budget. The purpose of this document is to give you a broad overview of what Bavis offers in terms of Audio communication systems for the drive-thru environment. This document describes the products and their abilities, but does not go into great depth into the technical aspects of the product. Hopefully the technical information presented here is enough to explain the products, their capabilities and benefits to the customer. Please contact your local Bavis dealer or the factory for more in-depth information.

## Products Offered:

Bavis offers two brands of audio systems. The first of these is Bavis' own audio using the trade names of BavSonic and BavCom. Bavis also represents audio systems designed and manufactured by Audio Authority out of Lexington, KY. Audio Authority is a standard in the industry for audio/video based drive-thru communications systems. Bavis no longer manufactures a video system, per se, so Audio Authority is a nice companion product where video is needed. Bavis does integrate Audio Authority components into custom video solutions.

As you will read later, Bavis has a special version of Audio Authority products which are only available from us. These modifications enhance the reliability of the products. Further, Bavis provides custom audio/video housings for Audio Authority which offer benefits not found in their standard product. As you will see, we do our best to add customer beneficial value to anything we promote. We also factory install Audio Authority components into our equipment if requested. Though we offer enhancement over the standard product, our pricing on these components is no more than when purchasing direct from Audio Authority, as we are a factory authorized reseller.

## The Bavis Audio System:

At the most basic, the Bavis BavSonic system uses a standard outdoor audio module to audio to the inside. The outdoor components consist of: speaker, microphone, call button and audio board. These components then feed the sound of the outside drive lane to whatever internal audio system is chosen. A special cabling system called a "balanced line" is used in



*Bavis One on Two Console*

order to eliminate electrical interference. In other systems, electrical interference is common because those systems stretch microphone and speaker lines from one end of the system to another. Those microphone and speaker lines essentially become antennas which pick up interference and feed it through the audio. Our balanced line successfully eliminates this problem.

On the inside, the signal can be sent to an audio console or one of many telephone audio interfaces. There are two basic types of consoles: "One on One" or "One on Two". One on One means that there is one console to one drive-thru service point. One on two means that a single console can switch between two different drive-thru service points. Photos of both consoles can be seen on page 3.

Please be aware that there are two different versions of the audio board: one is for use in analog audio and the other is for use in digital audio systems. Aspects of the signal conditioning that are done to aid in making the analog system work well, are horrible for the digital and vice versa. Use of an analog external audio board to feed a digital system will not provide an acceptable solution and vice versa. So, if you are feeding a regular one on one or one on two console, use the analog specific board. All systems feeding digital phone systems, specifically **Voice Over Internet Protocol** phone systems (VoIP), the most popular digital system, must use the digital board. Any system that utilizes the Bavis Enhanced Audio Module (BEAM), which is described below, must use the digital audio board. More on that below.

## What is BEAM?

The term BEAM stands for **Bavis Enhanced Audio Module**. This module, which is really a computerized voice processor which reduces background noise, eliminates echo and increases the speech level. BEAM is a digital signal processing system which is why it requires the digital audio board. What this all means to the end user is that BEAM makes it easier to hear and understand the customer in the drive-thru under varying conditions. BEAM can be used in problem sites like ones where street noise, or other environmental issues make it difficult to impossible to hear customers. BEAM improves the clarity of incoming audio making customers easier to hear and understand. So, while BEAM is a great aid at problem sites, it benefits any drive-thru audio system.

Many have asked how BEAM works. In a nut shell, BEAM has a high powered digital signal processor that constantly listens to the audio signals and looks for sounds that are known to be noise. Regularly repeating sounds, like the sound of a diesel engine or the sound made by cars going down a highway out in front of the store, are just a couple of examples of the noise BEAM can eliminate. Once it identifies that noise, BEAM minimizes or eliminates it from the audio stream and passes the cleaned up signal to the inside audio. One of the best ways to demonstrate BEAM is to play the sound of a diesel engine at the outside microphone and listen as BEAM reduces or eliminates the sound; yet the person speaking at the same time can be heard clearly once the motor noise is eliminated.

BEAM with the proper audio board, can be added to any BavSonic console or telephone audio interface except the Bavis SIP (**S**ession **I**nitialized **P**rotocol) VoIP Interface which already has BEAM built in. BavCom audio is compatible with BEAM but requires additional cabling. We believe BEAM should be a part of every drive-thru audio system because it keeps communications clear and useable under varying conditions. No other drive-thru audio system provides this sort of feature!

There are specialty versions of BEAM. The one that is most common is the BEAM module that has been adapted for use with Audio Authority Audio systems. Adding BEAM to Audio Authority products in

problem site will make the audio cleaner and clearer providing better drive-thru communication. Note that in order to be successful with BEAM in this application, Audio Authority's speaker, speaker back box and amplifier have to be replaced with the Bavis calibrated parts which are all part of the kit for Audio Authority Audio. Please contact Bavis for details.

## Telephone Audio:

Bavis produces 4 different interfaces to merge the outside drive-thru audio with the institutions telephone system. The products are: the **Universal Telephone Audio Interface (FXO)**, the **Universal Telephone Audio Interface (FXS)**, the **E&M Telephone Interface** and the **Bavis SIP Interface** for VoIP Telephone Audio Interface.

## Benefits of Telephone Audio:

Before going into the specifics of each interface, let's discuss the value of hooking your drive-thru audio to your telephone system. The first is flexibility. Using one of the telephone interfaces, a drive-thru customer comes into the phone system as a call. The phone system can direct that call to whomever is programmed to receive it. The drive-thru customer can be put on hold, transferred to someone else and even be conferenced in with others if the need be. Literally, anything that the phone system can do with a call can now be done with the drive-thru audio. This capability means that complex transactions can now be handled at the drive-thru quickly and efficiently. Now there is no limit to the possibilities for the kind of drive-thru transactions that one can offer their customers.

The benefits don't stop there. The phone systems allows flexibility inside as well. One can use the handset of the phone, speakerphone or a wireless headset. The phone system is likely already being used at the banking or pharmacy drive-thru for outside communication, so using telephone audio to communicate with cars in the drive-thru leverages that phone asset already in play with no additional costs.

Through the use of either the hand set or a head set, using a phone is more private than the conventional audio system used at the drive-thru. Further, because a hand or head set is used, it is often easier to hear the customer because the hand or head set is next to the ear.

Phone systems are durable. More so than the conventional gooseneck microphone arrangement. Therefore you spend less on maintaining these systems than the conventional audio system.

As you can see, telephone audio offers significant advantages to the old style audio found in most drive-thrus.

## Choosing a Telephone Interface:

Choosing which type of interface to use may seem like a daunting task with all the technical terms, different types of phone systems and ports. Before describing all the various options, please know that E. F. Bavis and Associates, Inc. is here to help. We strongly suggest that you allow us to work with you and help choose the product that is right for you. To that end, we have included, at the end of this document, a questionnaire to fill out before contacting us. It asks questions that are key to choosing the solution that is best for you.

## Technical Aspects of Telephone Audio:

The remainder of this section is somewhat technical. If you are not interested in the technical details, we suggest you skip over to the next section of the document which discusses Audio Authority products offered by Bavis.

For PBX type phone systems over analog lines, one of the Universal or the E&M telephone audio interface is the proper choice. There are different ports in phone systems that allow access. The Bavis Universal Telephone interface comes in a version that is used for “CO” (FXO) ports and a version for “Station” (FSX) ports. The FXO version is the preferred port but, if that port is not available, Bavis offers the FSX port as well. The E&M interface is for an “E&M” port in the phone system. Contact your phone provider to find out what types of ports are available. If the phone lines are analog and you are not using BEAM, then a standard outside analog audio board should be used with these interfaces. Otherwise choose the audio designed for digital systems.

This may seem redundant, but it is important: while all three port solutions are offered, **Bavis strongly recommends that FSX ports not be used.** There are technical reasons beyond the scope of this document that are the basis for this recommendation.

## Hybrid Phone Systems:

Today it is common to have an analog phone system feeding a digital VoIP phone line. For purposes of this document, we are calling this configuration a “Hybrid Phone System”. As described previously, because an analog signal has much more data than can be represented in the type of digital coding being used, the digital representation of the analog signal is reduced in resolution. This lower resolution is insufficient to represent voices and background noise in a way that the human ear can interpret the difference when converted back to analog sound that we can comprehend. This makes conversation at the drive-thru difficult, at best, to understand. Many describe the audio as muddy or unclear. Bavis BEAM solves this problem. Again, the BEAM reduces background noise, echo and deals with the gain (volume level) of the audio system. By dealing with these issues, the analog signals that are presented to be turned into digital signals, are free of the background noise and are presented at the proper volume level. So, when the digital signals are turned back to analog audio at the other end, they are much easier to understand.

The point of this section is, if your phone signals are at any point converted to digital signals, BEAM is the best way to insure that the audio system can be heard and understood.

## Digital (VoIP) Phone Systems:

The other type of telephone interface we offer is what we call SIP audio. This version of the telephone interfaces becomes what is known as a “VoIP End Point.” What that means is that our audio system is actually a native part of the VoIP phone system through the Bavis SIP interface. Because it is now a part of the phone system, there are no additional ports required. Therefore FSO, FSX and E&M are not required.

“SIP” stands for “**S**ession **I**nitialiated **P**rotocol”. Think of SIP as the internal programming language and communications protocol of the VoIP phone system. The phone system and our audio system, through the native phone wiring and the Bavis SIP Interface use the SIP programming language and protocol to

negotiate all the details of how they are going to talk to one another, once it is installed and working. There is a process that has to be employed in order to get our interface registered in order to work with the phone system, which has to be handled by your phone vendor, but once that is done, our product is just another component to your phone system. There are no additional interfaces or components to add. So, there are no special ports to purchase and maintain.

BEAM is part of the SIP module. BEAM is the most advanced telephone audio system available in the market today. It is the only one designed to solve problems by constantly adjusting to the changing conditions of the drive-thru.

### Audio Authority:

Audio Authority is a company who has manufacturing facilities in Lexington, KY that produces audio only and audio/video systems for drive-thru. This system is not connected to the phone system in any way. A full description of their drive-thru audio products can be found at:

<https://www.audioauthority.com/index/intercom>

Their system is a complete standalone drive-thru audio and video capable of up to 8 inside consoles on 16 outside positions. The way their equipment works is that there is a terminal or console that is used at all inside positions and another component called a lane station module used on all outside positions. They are interconnected by way of different hubs depending on the specific application. The most basic hub allows for two inside positions to speak with a maximum of four outside positions for audio only. From there on, other hubs allow for other combinations of inside and outside audio and video. This is best explained by Audio Authority's website cited above.

In addition to audio, camera and monitor modules can be added. The inside console has provision for this camera monitor to snap on adding video. Outside Bavis produces a module that houses the camera, monitor and various control boards in order to add this capability to the drive-thru communication system.

In the case of problem sites, Bavis can provide a special version of BEAM to help with background noise and echo problems that can be associated with this type of audio.

There is a great deal of flexibility available with the Audio Authority system as long as it is used as a standalone system. Audio Authority products are available from a number of different drive-thru OEM's and therefore is considered by some a standard. Bavis not only installs these systems into the drive-thru equipment at the factory, but also adds value by providing custom versions of the Audio Authority equipment which are environmentally hardened and offers custom outside audio/video modules which offers better visibility and protection to the components against the weather.

### Specialty Products:

The audio systems we offer are all modules. Because of this, we have the flexibility to configure modules in different ways to meet particular needs. For instance, one of our customers has bay window installations. They had used our standard audio/video head, but this head stuck out into the lane, because of the bay window and as a result, got hit by cars on a regular basis. To solve this problem Bavis designed a thinner head that was close to the window. Of course, accommodation had to be made

because all of the required electronics would not fit in this new head, but that was all part of the design that Bavis came up with. There are lots of opportunities for creativity. If you have a drive-thru audio application or idea that is novel or has some sort of audio problem, contact Bavis to discuss it. Who knows what we might be able to do!

## Conclusion:

E. F. Bavis and Associates, Inc. provides unique audio offerings as well as the old standby systems for audio in the drive-thru. We are the only manufacturer that solves difficult problem audio environments. While others offer Digital (VoIP) audio that hook to phone systems, Bavis is the only vendor that provides a product that constantly adjusts to provide the optimum audio that can be heard and understood. We offer a lot of different solutions to meet your ever changing needs. Remember, we also do custom solutions, so if you have an unusual application, don't reject us out of hand, but call and discuss it with us. If we don't have it, we might be willing to make it. The final decision is subject to a lot of different variables, but if there seems to be business sufficient to cover development costs and provide profit, it is hard to imagine we would not pursue the opportunity.

If there are any questions or ideas about audio in the drive-thru, please give us a call.

# Survey for Telephone Interface

**Name of Institution:**

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**Address of Institution:**

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**Project Contact:**

\_\_\_\_\_ **Phone:** \_\_\_\_\_ **Email:** \_\_\_\_\_

**Technical Contact:**

\_\_\_\_\_ **Phone:** \_\_\_\_\_ **Email:** \_\_\_\_\_

**Brand of Phone:** \_\_\_\_\_ **Model no.** \_\_\_\_\_

Is this VoIP phone system? \_\_\_\_\_

Is this phone system a hybrid where non-VoIP stations feed a VoIP switch or router? \_\_\_\_\_

Does this system support any of the following: \_\_\_FSX \_\_\_FXO \_\_\_SIP (Please mark all that apply)