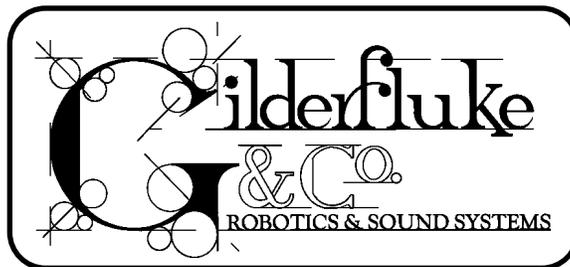


**"Always do right.
This will gratify
some people and
astonish the rest"
- Mark Twain**



**All the News
that we could
jam into a little
under 4⁶ pages**

Views and News from the world of Gilderfluke & Co.

Fall 1996

Number 6

New 'Dumb' Bricks

Micro MACs 'Bricks' were Gilderfluke & Company's first Animation Control Systems. They are part of the largest selling Animation Control Systems in the world. There are literally thousands of Bricks operating around the clock on every continent except Antarctica.

The original Micro MACs Systems have been available since 1983 in stand-alone record/playback units (our big seller before PC-MACs became so popular), playback only bricks complete with case and power supply, or cards for mounting in card cages. (In 1989 we introduced the Smart Brick Animation Control Systems. The Micro MACs Bricks were thereafter nicknamed 'dumb' bricks to differentiate them from the 'Smart' Bricks.)

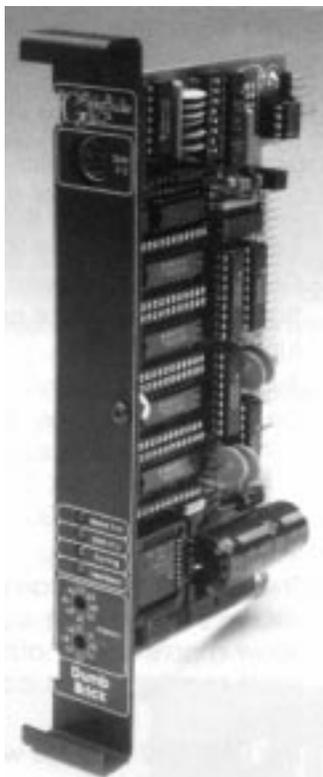
It has been nine years since the Micro MACs Dumb Bricks were last updated, it seemed appropriate to give these workhorses a face-lift.

Most shows were at one time programmed on record-playback Bricks. Now most programming is done using a PC-MACs Animation Control System running on a PC under Windows 3.1 or '95. Once programmed, the animated show data is burned into Eproms and installed on the Bricks. To help with programming from a PC-MACs system, these new Micro MACs Bricks are available with optional DMX-512 inputs.

These new Micro MACs 'Dumb' Bricks feature:

- Thirty-two medium current digital outputs. Boards can be stacked to control shows of any size.
- Frame rates supported at 15, 16, 30, 32 frames per second (FPS), or an external clock at up to 1 KHz can be used. Other frame rates can be special ordered.
- Holds up to four Eproms of up to 1 MByte in length. This yields a show capacity of up to 9.7 hours at 30 FPS.

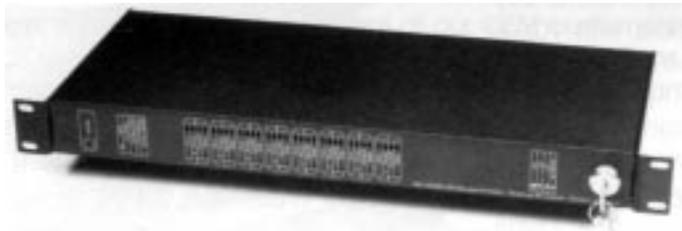
~ c o n t i n u e d o n p a g e 2 ~



**New & Improved
Micro MACs 'Brick'**

New PA System for Houston International PeopleMover

When the Houston International Airport opened fifteen years ago, WED (now known as Walt Disney Imagineering) installed a WEDWay PeopleMover system for carrying passengers between terminals. This was Disney's first (and only) foray into real world transportation systems. They have since licensed their PeopleMover technology to Bombardier Inc. of Montreal, Canada. The Houston installation is now maintained by a division of Johnson Controls.



The Houston PeopleMover included what was a typical audio system for WED at the time. Cartridge tape decks were used for automated announcements. Hundreds of relays routed these and any operator announcements to

~ c o n t i n u e d o n p a g e 4 ~

World Wide GilderWeb Page

In our continuing commitment to communications in the '90s, GilderFAXes, GilderNewsLetters, and GilderCalls have now been joined by the GilderWeb page. It can be found on the World Wide WEB at:

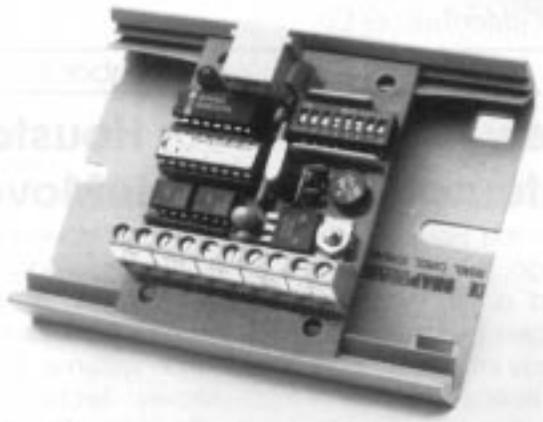
<http://www.gilderfluke.com>

The GilderWEB page allows instantaneous access to all of our Cut Sheets, Manuals, Demo Software, Application Notes, Price Lists, and any other scraps of paper we are trying to get rid of (like this newsletter). All documents are being posted in Adobe's PDF format, so the documents you download and print will look exactly as they should. A hot-link to Adobe to download their PDF viewer is included in our Web page.

The "Updates" page allows Registered GilderUsers to obtain free updates on all of our software and firmware. "Order Entry" allows you to get the exact pricing and place your orders. The "Mail Room" allows you to exchange files and ask our technicians questions.

Mini Smart Brick Brain

The 'Brains' used with our Smart Brick Animation Control Systems allow you to have up to 255 different shows on a system, lock to LaserDisks or Smpte time codes, and even play shows that have been scheduled to play up to a year in advance. Some shows just don't need all of these features. For these, we have now introduced a new Smart Brick MiniBrain.



The new MiniBrains can be used wherever you need to synchronize a number of Smart Bricks, or use Analog Output or EFB Smart Bricks in what would otherwise be a 'Dumb' Bricks system. We expect several of our OEM customers to start using these MiniBrains in all of their small installations to eliminate the need of stocking both Smart and Dumb Bricks.

These new MiniBrains feature:

- Small 2" x 2-3/4" card can be mounted on Augat SnapTrack or on standoffs.
- Runs from power supplies of 8 to 24 VDC.
- Smart Brick Network from one MiniBrain can control and synchronize any number of Smart Bricks, Analog Smart Bricks, or Electronic FeedBack (EFB) Smart Bricks.
- Supports frame rates of 15, 16 or 30 Frames Per Second or can run from external clock signal.
- Supports memory on the Smart Bricks of up to 1 MByte. This translates into almost a ten hour long show at 30 FPS.
- Separate optically isolated Start, Stop, Reset and External Clock/Double show inputs.
- The show memory can be divided into any number of shorter shows which can be accessed sequentially. Show memory can also be divided into two equally sized segments that can be selected by an external signal.
- Guaranteed to power up stopped and up looking at frame zero, unless of course you want it to power up running.

Windows '95 OK for PC·MACs

In our last issue we reported on some problems with Windows '95 taking occasional 'vacations'. During these, it locks up and refuses to respond to keyboard, mouse, or anything else for about five seconds. This seems to be a

ubiquitous Windows '95 problem on certain machines (networks seem to exacerbate this problem). It takes vacations when running any and all programs, including Solitaire, and not just when running PC·MACs. Although they don't cause damage, these are not the sort of thing you want to see when running an Animation Control System.

It turns out that this problem is cured just by using Bill Gate's universal solution: "get a faster computer". This symptom doesn't seem to be present when running on a fast '586+ (Pentium) PC.

NewDumbBricks.....continuedrompage!

- Available as playback-only cards for rack mounting, playback-only bricks with power supply and case, or record/playback bricks.
- Most configuration is done using an eight position dipswitch. Once the memory type and frame rates are set, you don't need to move any more jumpers.
- PTC 'Circuit Breakers' on each of four eight bit channels.
- Rack-mounted cards include an aluminum front plate for a more finished looking card cage (and better heat dissipation).
- Separate optically isolated Start, Stop, Reset and External Clock/Double Show inputs.
- Guaranteed to power up stopped and looking at frame zero (unless of course you want it to power up running).
- Available with or without DMX-512 option, or can even be ordered with only the DMX-512 option if you just need thirty-two digital outputs from a DMX-512 signal. A card with the DMX-512 option can be addressed anywhere between 00 and FFh using a rotary dipswitch on the front.
- The show memory can be divided into any number of shorter shows which can be accessed sequentially. Show memory can also be divided into two equally sized segments that can be selected by an external signal.

The DMX-512 features we added to the Dumb Bricks will soon be added to the next generation of our Smart Bricks as well.

Gilderfluke & Co. Show Plans

We are scheduled to exhibit at the following trade shows and conventions in 1996 and 1997. Most of the equipment described in this newsletter will be on display at these shows:

- Oct. 1-3, '96: World Gaming Congress & Expo, Los Vegas, Nevada Convention Center
- Oct. 10-12, '96: Fun Expo. Sands Expo Center, Las Vegas, Nevada
- Nov. 20-23, '96: IAAPA (International Association of Amusement Parks and Attractions) at the New Orleans Convention Center in New Orleans, Louisiana.
- June 13-15, '97: Show Biz Expo at the Los Angeles, California Convention Center

Motion Base Control

Many people are surprised to find out that our Animation Control Systems are often used to program and run many motion simulators. As far as the Animation Control System is concerned, a motion base is just another animated figure.

Motion bases usually feature either three or six axis of movement. Each of these axis requires an analog control signal from the Animation Control System which runs that axis' actuator. Hydraulic cylinders are most commonly used, although a small number of bases use electric, pneumatic or hybrid actuators.

The resolution used for each movement determines the number of steps between each extreme position on each actuator. Eight bits of resolution gives only 256 steps. This is only used on some very small or low performance simulator bases. Most motion bases use either twelve bits (which gives 4096 steps) or sixteen bits (for 65536 steps) resolutions.

PC·MACs supports resolutions up through 32 bits. This gives 4,294,967,296 possible steps between each extreme. Since this means a 67 mile long actuator could be moved in .001 inch steps. It isn't often needed.

Although film has typically been used for the visual images used in simulators, it has largely been replaced by LaserDisk video or High Definition Television (HDTV). This is mainly for maintenance reasons. A LaserDisk lasts far longer than a piece of film. Our Animation Control Systems can control and synchronize with most major LaserDisk players, so no additional interface is needed.

Motion bases are typically programmed using a 'joystick' that is built as a model of the motion base which is being controlled. This allows the programmers to 'fly' the motion base as they watch the video or film program and program all axes in a single pass. They can go back at any time and reprogram just the sections that need cleaning up in real-time. PC·MACs will automatically 'inbetween' any jumps that were created during editing punch ins/outs. The OffLine editing functions of PC·MACs can then be used to put the final polish on the program.

The alternative to a custom joystick is to use custom software to convert the data from a standard joystick to the appropriate number of degrees of freedom for the simulator which is being controlled



Typical Smart Brick System for a Small 3 or 4 axis Simulator Base

Although PC·MACs is used to program most motion bases, you don't want to leave a PC running a show that is shipped into the field. There are two reasons for this: a) The PC would be the most unreliable part of the control system, and b) It costs far less to send out a Smart Brick System with

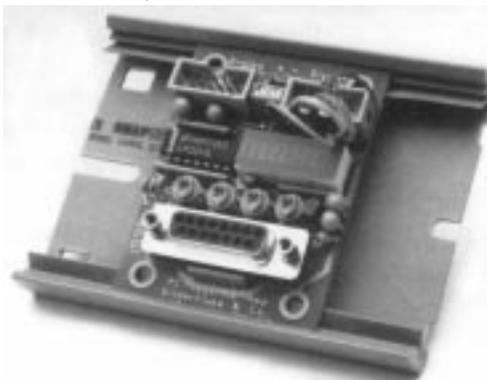
each motion base. The typical field installation consists of a Smart Brick Brain, two or three Smart Bricks, and three to six twelve bit resolution Digital to Analog Converters. Additional outputs from the Smart Bricks can be used to control lighting, fans, and other special effects inside the simulator.

A word about safety: Since a simulator is throwing people about, safety is an important consideration. Typically a small PLC is used to monitor safety function (doors, seat belts, loading ramps, etc.) and shut down the motion if anything goes wrong.

A Gilderfluke Control system should not be used in any application where its failure can cause injury to riders or operators.

PC-Style Joystick Amplifier

For years we have made a Sixteen Channel Joystick Amplifier (AMP-16). It is often used by special effects technicians with our sixteen Channel Servo Controller (SER-16) to run a number of airplane-style servomotors through a hardwired connection. The Joystick Amp boosts the signals from sixteen 10 K Ω potentiometers to the 0-10 volt signal that the inputs on our SER-16, MACs-CON or MICRO-CON want to see on their inputs. Joysticks with 10 K Ω potentiometers on them are the standard value among industrial control systems and are available from a number of different suppliers.



Four Channel AMP-PC

A more common type of joystick is built for PCs. These use 100 K Ω pots on two, three or four axes. Although not built with the precision or sturdiness of the industrial joysticks, they sure are a lot easier to find (and cheaper to buy once you find them).

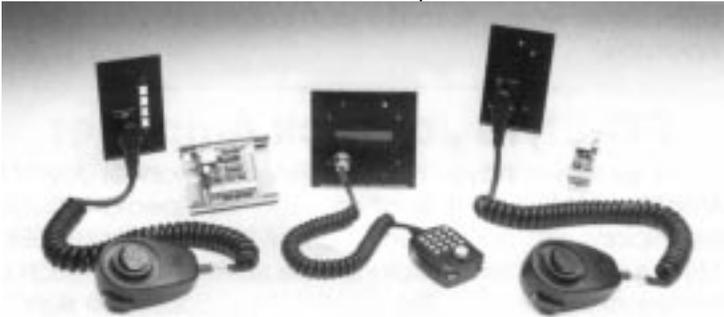
These new PC Joystick Amplifiers (AMP-PC) each feature:

- Four Channels of amplification allow the connection of a single three or four axis joystick, or can be used with two dual axis joysticks by using a commercially available 'joystick splitter' cable (available from any computer supply store).
- Output from the Joystick Amp is on a single 1/4 J6/A connector. Compatible with 0-10 volt analog inputs to SER-16, MACs-CON or MICRO-CON.
- Supports up to four pushbutton inputs. These can be routed to any four bits on a 1/4 J6 connector on the Joystick Amp.
- Small 2" x 2-3/4" card can be mounted on Augat SnapTrack or on standoffs.
- Runs from power supplies of 15 to 24 VDC.
- LED indicators show levels of each of the analog outputs and status of the four switch closure inputs.

PA System.....continued from page 1:

approximately 35 output zones. This was all controlled by a microprocessor running a custom program triggered by the Allen-Bradley Programmable Logic Controller (PLC) which runs the trains.

We were approached initially some two years ago by Audio Communications about replacing this Disney system. The equipment they installed included a MA-100 PA Master, three MA-400 PA Sub-Masters, and an assortment of PA stations. This gives a total of fifty-six Audio inputs, PA station connections and audio outputs.



Four Button, Five Input Phantom, Smart, One Button, and One Input Phantom PA Stations

A rack of thirty-two DR-50s and a single AB-3000 replaced the cartridge tape decks used for the automated announcements. The DR-50s worked perfectly because of the relatively short length of most of the announcements. The AB-3000 is used to provide the two long messages (one of these is over fifteen minutes long!).

A RTU/FSK is used to interface between the existing train control PLC and the new audio system. With the unusual interface requirements of the old PLC, this was the only piece of equipment in the entire installation that needed any modification from our stock equipment. Its 128 outputs are used to trigger the Digital Audio Repeaters and phantom PA stations used for the automated announcements.

The audio which is fed into the individual audio inputs is fed straight through to the corresponding outputs. This is used for the music and sound that normally plays out of this set of speakers. The volume on each of the outputs can be adjusted from the PA Master or the PA stations. In the Houston installation, only the PA station in the central control room is able to adjust the audio levels. When a PA request is made, the audio on the appropriate outputs are ramped down while the audio from the PA station making the request is routed to those outputs. When the PA announcement is finished, the normal audio is ramped back up to the normal levels.

Any PA request can be routed to any number of outputs in any combination. Which outputs respond to which PA requests is configured in the field by simply entering the numbers of the PA requests you want each output to respond to. The outputs prioritize the PA requests by looking at where in this list the PA requests are located. Entries at the top of the list have higher priorities than those at the bottom. A total of nineteen entries, and so nineteen different priority levels, are available for each audio output.

As this was a retrofit, and the existing PA stations in the field were perfectly serviceable, most of the PA stations were 'Phantoms'. These allowed the audio signals and switch closures from the existing PA stations and new Digital Audio Repeaters to access the different PA zones and outputs.

The new audio system replaced two six foot tall 19" racks of Disney equipment. The new Gilderfluke & Co. PA System takes about a foot of 19" rack space.

Similar Gilderfluke & Co. PA systems are also used for park wide or individual attraction PA systems at Knotts Berry Farm, Sam's Town Casino in Las Vegas, and the Santa Cruz Boardwalk.

Multiple LaserDisk Control

This is a trick we got directly from Pioneer. It can be used with any PC-MACs system or standard Smart Brick Brain when you need to control a number of LaserDisk players. Rack Mounted Smart Brick Brains can already control seven LaserDisk players.

The outgoing serial data from the MACs-SMP or BS-BRN is wired to all of the LaserDisk players that are to be controlled, while the incoming serial data comes from only one of the players. The easiest way to do this is to install a 232conv-15 (for Pioneer players) on each of the LaserDisk players, and daisy chain the serial data cable between them. Cut the Rx data lines after the first player.

The disks all need to be burnt with the shows starting at the exact same frame numbers. When a show is started, all of the LaserDisk players will seek the same start frame and play the disks in parallel as if only one LaserDisk player was attached to the Animation Control System.

Application Notes

We are often asked to help our clients with specific projects and questions. If we get asked for the same question more than a few times, our 'stock response' will usually evolve into an 'application note'. The subject of these range from "How to hook up pneumatic cylinders" to "How to build a simple programming console" to "How to attach an animation system to a remote control".

Who knows, even if your application seems pretty bizarre, we may well have the answer in one of our application notes. Just give us a call to find out.

Our Two Most Asked Questions

In the dozen or so years we have been in business, the second most commonly asked question is where our company name came from.

Eli Gilderfluke was a cartoon character who appeared in railroading trade magazines in the middle of the 19th century. More or less a precursor of Rube Goldberg, he developed strange inventions for steam trains. These were things like a big scoop to catch the exhaust coming out of the smoke stack and feed it back into the engine's firebox.

The answer to the most commonly asked question is: *'No, we don't build animated figures.'*

Automated Theater Control

Automation systems for motion picture theaters are widely available. They will run the projector, turn on and off the house lights and perform most of the other basic functions required in a movie theater.

Following the lead of Disney's El Capitan theater in downtown Hollywood (right across Hollywood Boulevard from the Chinese theater), many theater operators are looking to putting more 'show' into their part of show business.

A Smart Brick System, as was used in the El Capitan, can be used to control any number of curtains, dim any number of lights, and do anything else you want to do in a theater.

Such a system is typically triggered by a commercially available film sensor which triggers one of several different automated shows. These play in sync with any audio which is recorded on the film. Typically these are used for the beginning of the presentation (before the trailers), a separate show between the trailers and the feature, a 'beginning of the end' show which raises the house lights slightly during the closing credits, and a final show which brings the lights up all the way and closes the curtains after the end of the credits. Additional shows which can be manually triggered by the operators are used to turn on the lights and close the curtain (for film breaks) and turn off the lights and open the curtains (for when the film break is fixed).

Animation Programming on the Road

You rarely get the luxury of programming an animated show in the comfort of your own office. Those of us who travel a lot are always on the lookout for anything that can reduce the size and weight of the equipment we need to carry. Unfortunately, PC·MACs Animation Control Systems need at least one ISA slot for the MACs-SMP card. Often more ISA slots are needed for your Eprom Programmer, audio, or networking cards. This precludes the use of most 'clamshell'-style portable computers. This can be solved by adding a 'docking bay' to portables made by IBM, Toshiba, and many other major companies.

The following manufacturers make either clamshell or 'LunchBox'-style PCs with one or more ISA slots. One of these with a MicroConsole make an ideal portable Animation Programming System:

- Dolch Computer: 408/957-6575 · FAX 408/263-6305
- Field Works: 612/947-0856 · FAX 612/947-0859
- Industrial Data: 713/821-3200 · FAX 713/821-3230
- PC Portable: 800/966-7237 · FAX 818/444-1027
- Promark: 800/227-3345 · FAX 408/733-0378
- Trans 2000: 310/908-6814 · FAX 310/908-6819

You will find that many of these will stand up to more abuse than you would normally inflict upon an Animation Programming System (dirt, liquids, atomic blasts, etc.). The cost of many of these PCs reflect their sturdiness.

Where to use PC·PB and Hard Disk Audio Playback

Hard disk audio playback is definitely the method of choice for programming a show on a PC·MACs Animation Control System. It allows you to instantly playback any point on the show without waiting to access the appropriate audio. It allows you to 'see' the audio waveform and its relationship to any movements displayed on the OffLine editing screen. You can even paste the audio into any animation function for quickly programming mouths.

Most shows are downloaded onto either a 'Dumb' or 'Smart' Brick Animation Control System for the permanent installation. This is not just because the Brick system is less expensive than the PC·MACs system that it is replacing. A Brick system is inherently more reliable than the PC in which the PC·MACs system is installed. But when should you keep a show running from a PC?

The answer depends on the nature of the show. If you answer "yes" to one or more of the following questions, you may have a good candidate for running from PC·PB.

Can you live with the occasional instability of a PC? Will there be someone there to go over and reset the PC if necessary? As with all PC's, this may sometimes require the vigorous application of your right foot.

Are there a lot of outputs needed for the show? A PC·MACs system may actually be less expensive if this is the case.

Does the show need a lot of audio on only one or two audio outputs? Solid State audio storage can be one of the most expensive parts of the electronic package. The cost of storing one or two audio tracks on a hard drive is just about free these days.

Is the show going to be changing regularly? If so, then a PC·PB system might well be the way to go. Once a show is programmed using PC·MACs, all you need to do is tell PC·PB when you would like it scheduled to play. Downloading to a Brick system would require burning and installing Eproms.

Downloading Lighting to an Analog Smart Brick

Lighting designers always want to program shows using their favorite lighting boards. Unfortunately, few of these lighting boards are suitable for permanent installations.

Once programmed, any lighting sequence can be turned into Animation Data by feeding it into a PC·MACs Animation Programming System while running the lighting board through the show. The lighting data can then be edited just like any Animation Data, and downloaded into one or more Eproms for installation into Analog Smart Bricks.

Up to 256 channels of lighting can be stored on each Analog Smart Brick. They can be set to free run, sync to a time code or LaserDisk. Different lighting sequences can be played based on the real time clock schedule (set up to a year in advance) or when triggered from external inputs.

Who Are We?

Gilderfluke & Company was founded in 1983 to build Animation Control Systems for theme parks, museums, and other entertainment venues. In 1988 we added audio systems to our product line, and became the first company to be able to provide the entire electronics package for your animated show or attraction.

We are the only company that delivers complete, off-the-shelf Animation Control Systems from stock. We currently deliver an average of two to four Animation Control Systems each week. Most are bought by large Animation Manufacturers for incorporation into their shows.

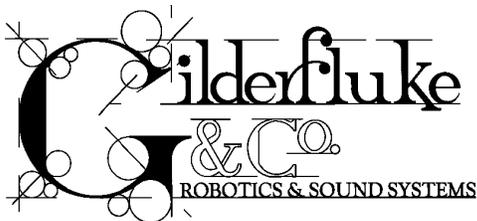
Our PC·MACs Animation Systems are the first to run under Microsoft's Windows. It is the technological leader among Animation Programming Systems. Our 'Brick' Animation Control Systems are the largest selling Animation Control Systems in the world. These are modular systems which can

be used to control any from the smallest to the largest shows you can imagine.

Our Digital Audio Systems are lead by our DR-3000 and AB-3000 series of Repeaters. These store CD-quality audio on computer-style memory for any installation where you need a sound to play reliably and with zero maintenance, forever. From two to thousands of outputs are available. Our repeaters are available with a clock option that allows you to schedule when sounds will play or for use in carillons.

Our low cost AB/DR-50 MiniRepeaters are used when you need to store one or more relatively short sounds. Their audio quality is about the same as a new cassette tape.

Our Intelligent Public Address Systems can be used in any application where you need 8 to 256 audio output zones. Any PA announcement can be sent to any output or combination of outputs. Each output has its own corresponding Background Audio input. Up to 256 PA stations can be attached to each PA System.



820 Thompson Avenue, Suite #35
Glendale, California 91201

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- **World Wide GilderWEB Page**
- **Mini Smart Brick Brain**
- **Windows '95 OK for PC·MACs**
- **Upcoming Show Schedule**
- **Motion Base Control**
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