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

Gilderfluke
& Co.
ROBOTICS & SOUND SYSTEMS
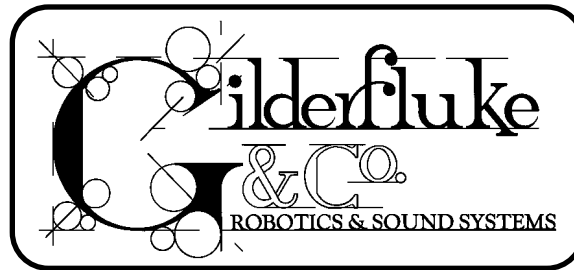
All the News
that we could
jam into a little
under 8 pages

Views and News from the World of Gilderfluke & Co., Inc.

Winter 2001 | **http://www.gilderfluke.com** | Number 10

BS-Serial & BR-MultiShow Combined for BR-SmartMedia

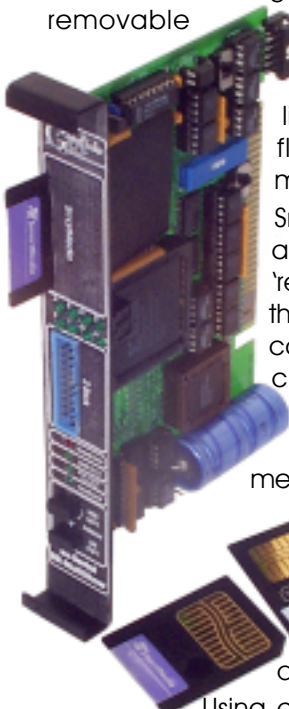AB/DR-3000 Digital Audio repeaters using PCMCIA removable memory cards for audio storage have been available for some time. We are now switching our animation line to use either 'program in place' flash or easy to use 'removable' memory.

SmartMedia is one of the most widely available and least expensive 'removable' type of memory. Physically, they are about 2/3 the size of a credit card, and about 1/32" thick. They are currently available in sizes up to 64 MBytes, with 128 MBytes coming soon.

Our first card to support SmartMedia memory combines the functions of the BS-Serial and BR-MultiShow. To support the SmartMedia, we have had to write what is effectively a version of the MS-DOS operating system to run on our cards.

Using a 64 MByte SmartMedia card, you will

Dimmers for Parade Floats
(or Any Other DC Dimming Job)

There many times when you need to dim a light. Not a big light, but just a little low voltage light. There are plenty of big theatrical dimmers available. We often encounter installations with a single 50 watt light bulb attached to each 2400 watt theatrical dimmer output.

The LG-DMX-DC is an eight channel dimmer module that is designed for applications where you need to dim low voltage DC lights. This can be on parade floats or other places where AC power is unavailable, or when you just need to control a bunch of small lights.

USB Smpte Card

The new MACs-USB is an all-new version of the MACs-SMP card. Instead of installing inside of a PC's ISA expansion slot, the MACs-USB attaches by a cable to the USB port found on most recent computers.

Because it uses a USB interface, it can be installed without having to open your desktop computer's case, and will work with

Video Record & Playback Box

Would anyone out there be interested in a high quality MPEG-2 record/playback box that costs about the same as a DVD player? We are currently working on adapting just such a product from one available in most video stores.

Internally, it runs Linux for rock-solid reliability, and has a standard capacity of at least an hour. It is serially controlled, using a subset of the industry-standard Pioneer LaserDisk and DVD command set. This makes it compatible with our (and most other) control systems. Because it is a record/playback device, you can load your own video onto it just as you would record a show on your VCR at home.

Z-Brick Now Does DMX-512 Too

Just about everything we make gets an updated design every few years to keep them 'state-of-the-art'. When it came time to update the design of the Z-Brick, it gave us an opportunity to play with incorporating a couple of new technologies into one of our simplest cards.
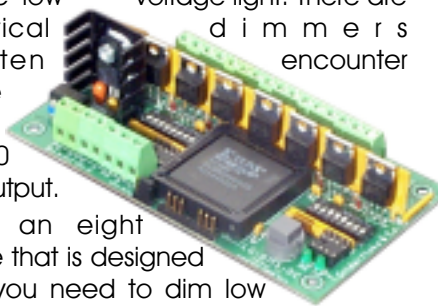
The original Z-Brick was designed as a quick solution to allow Disney Imagineers to program our Show Control Systems using their in-house programming system. Many of our cards were later designed to support the simple address-data-strobe 'Z-Buss' interface to allow digital

Passwords for Brains

Sometimes licensing payments are based on the number of times a show plays. Sometimes you just want to make darned sure that _you_ get paid.

Whatever the reason, new timer functions on our BS-BRN-CRDs may be used to stop a Smart Brick system from running after it has played a preset amount of time or number of shows. It can even shut down a system if someone tries changing its configuration.

There are sixteen different timers. Each one can be set to a different function or length of time before it expires. This allows you to schedule payments using a tier of timers set to expire at regular intervals. The first several entries in the sample setup screen below shows how you would do this.

When a timer expires, it locks up the Smart Brick Brain and displays a message on its two line LCD screen. You define the messages, and can even display your phone number and tell your client that they _really_ should call you!

The only way to unlock a timer is by entering a password which _you_ have defined. Each timer can have its own password. Clearing passwords is done through the serial

```
- Gilderfluke & Co. Rack Smart Brick Brain - rev. 2.06 copyright 1991-2001 DCM -
                          Lock Counter/Timer Setup
     types     date     count   key to clear    message line 1     message line 2
0) each hour 09/13/00 _____720 '30_Day_Key' '__30 Day Timer__''____Deadman_____'
1) each hour 09/13/00 ____4320 '6_Mo._Key_' '____Six Month___''____Deadman_____'
2) each hour 09/13/00 ____8760 '12_Mo._Key' '__Twelve Months_''____Deadman_____'
3) each hour 09/13/00 ___17520 '24_Mo._Key' '____Two Year____''____Deadman_____'
4) ......... ........ ........ '..........' '...............''...............'
5) ......... ........ ........ '..........' '...............''...............'
6) cleared a 00/10/00 12345678 'Guess_What' '_____I_Am_____''__User Cleared__'
7) ......... ........ ........ '..........' '...............''...............'
8) any show  09/13/00 _____646 '123456____' '__Any_Show_(8)__''_123456_=_key__'
9) configure 00/10/00 _____0 'do_config.' '...............''...............'
A) ......... ........ ........ '..........' '...............''...............'
B) each min. 09/13/00 12341148 'minute____' '_____Minute_____''____Deadman_____'
C) any show  03/01/01 _____123 'The Grinch' '.......ET.......''...Phone Home...'
D) tampering 09/15/00 ____8795 'tampering_' '___Tampering____''_DeadBeat_Timer_'
E) EXPIRED b 09/10/00 _____0 'Password__' '_____I_Am_____''_____Expired____'
F) show 255  09/13/00 ___46072 'Hi_Mom!___' '__I_am_tired_of_''this damned show'
   p) password to this screen- 'DCM_____' k) clear show counters
   m) more...   o) load defaults   r) download configuration    x) eXit

                          enter command-
```

port. This requires access to a computer of some sort. The serial port of the Smart Brick System can also be attached to a modem for clearing passwords and checking on the system remotely. If a password is entered before a timer expires, then the timer will be disabled and never expire.

DC Dimmer...... continued from page 1:

The LG-DMX-DC takes in a standard DMX-512 dimmer control signal, and pulse width modulates eight FET transistors. Each of the eight channels will dim a load of up to five amps, at voltages of up to 24 volts DC. This is enough to light up a 50 watt bulb at 12 VDC or 100 watts at 24 VDC. Each output is protected by a PTC fuse.

And if you need to control even bigger loads? Just attach high current DC solid state relays to the LG-DMX-DC's outputs. These have capacities to 40 amps or more.

Touch Screen Control

Touch screens scream '**_HIGH TECH!_**' to clients. We don't know why. For the past fifteen years just about all of our products have included a RS-422 serial port which can be attached to a touch screen. By networking all of our cards together, you can control an entire display or attraction. Add more and you can control an entire museum or theme park. The network can as long as a mile. You can add any number of terminals, as long they don't talk at the same time.

Dedicated touch screen 'operator panels' are available from a number of industrial control suppliers. These are available in a variety of sizes, and in black & white or color.

The touch panel we used at recent trade shows was provided by Mike Simpson at QSI Corporation in Salt Lake City, Utah (qsicorp.com / 801/466-8770). It came with a simple Windows program that allowed us to quickly draw 'buttons' and attach ASCII strings to them. Toni had it up and running in just a few hours. Multiple menu pages were available, and with the standard RS-422 serial port, connection to all of our systems' networks were a snap.

If you need more complete control and monitoring of the network, just about any computer running just about any terminal program can also be used. If you need a custom user interface, a simple Visual Basic program (or any language you prefer) can be used to trigger and monitor the network. You basically design your screens, and attach small programs to each 'button' that sends out a simple ASCII string to the serial port. If you put a touch sensitive monitor on your computer, commands can then be triggered by just 'touching' the buttons on the screen.


Custom Design Work

As time allows we do custom design work. Most jobs are for clients that need a product to do a specific job that none of our off-the-shelf boards will do. In most cases these have been incorporated into products produced by our clients. Most involve DMX-512 in one way or another.

What's New In PC·MACs

One of the 'pain in the butt' necessities for animation programming is the need to make sure that the ends of the shows 'line up'. This means that the analogs and digitals are at the same levels at the start and end of each show. If you don't do this, there can be a 'jump' when a show starts. Several of the changes in PC·MACs are designed to make this task easier:

• To check the ends of the show, you can alternate between the 'Set to First Frame' and 'Set to Last Frame' commands (keyboard shortcuts are the <Home> and <End> keys). These commands move all of the outputs to the data that is stored in either the first or last frame of the show, respectively. If you see any movement, you know something is not lined up properly.

• If you move some channels to the OffLine Editing Window and move to the end of your show, you will now
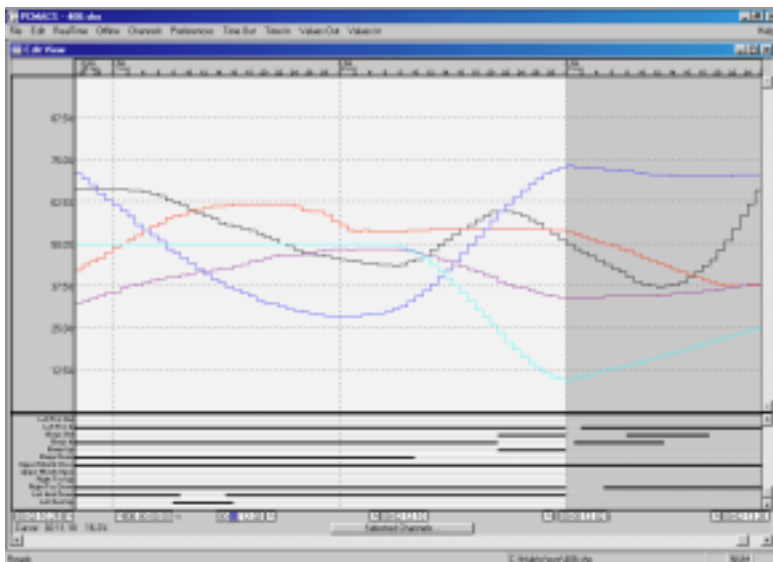
see the 'beginning' of the show 'grayed-out' after the end of the show. In this way you can easily see any discontinuities.

Select one or more analog channels starting a bit before the end of the show and extending your selection area a single frame *past* the end of the show. Now if you do an 'Inbetween', the command will use the data from the first frame of the show as the target, and a perfect match between the end and beginning of the show will be created. This technique works particularly well on shows that will be moving even *during* the loop point, as shown above.

• You can select and copy the first frame of the show, and paste it into the last frame of the show. The 'cut/paste' options can be set to automatically 'clean up' your 'pastes'.

• One of the easiest ways to make sure that the ends of a show line up is to set the 'defaults' for each channel to the start/ending values you would like to use. Analogs use a 50% default 'default' value and digitals use a default 'default' value of 'off' when created. By doing this, you can select any number of channels on the OffLine Editing Window and just hit the 'Set to Default' command (<Delete> keyboard shortcut) to set the start or end to the proper values. If the 'cut/paste' options have been set, they

can automatically 'clean up' any changes you make.

• PC·MACs has a way for you to keep the ends from ever getting set to anything other than default values when you do a real time 'Record'. To do this, just keep the 'Punch In Time' set at least one frame after the start of the show, and 'Punch Out Time' set to at least one frame before the end of the show. PC·MACs will then never change the ends of the show from the default positions.

Other enhancements on PC·MACs & PC·PB include:

· **Supports MACs-USB version of the MACs-SMP**.
· **Pencil Tool for Rubberbanding**. Before you could 'mush' analogs around, now you can actually 'Draw' the curve you want to see. This works great for flicker patterns or cleaning up mouth moves that have been roughed-in using 'Yak' functions
· **Looped record and Rehearse** modes. Automatically drop back to playback (or not) on loops.
· **Analog and digital 'Set to....' commands** separated. This allows you to select both analogs and digitals and modify only the channels you want to.
· **Set Min/Max Limits.** This new command allows you to trim the upper and lower levels of analog channels to keep them from exceeding the limits you have set.
· **Runs equally well under Windows '95, Windows '98, Windows NT, Windows 2000 and Windows Millennium.** (USB is not supported by Windows '95 or Windows NT.)

Serial Device Controllers

'Get out of Jail' is one of the best wild cards to draw when playing a game of Monopoly. This new little BR-SDC Serial Device Controller is a sort of Show Control equivalent of the 'Get out of Jail' card for system designers.

The BR-SDC is a little shrink wrapped module. It is designed to attach right to the back of the DVD, LaserDisk player, or whatever it is controlling (Velcro included).

When triggered by one of its ten optoisolated inputs, strings can be sent out to any RS-232 serially controlled device. These can be up to one h u n d r e d c h a r a c t e r s long, and can i n c l u d e characters you want to send along with characters you need to receive. The BR-SDC can branch to another string on completion or failure of a string, or delay until a time or a specific frame on a LaserDisk or DVD is reached.
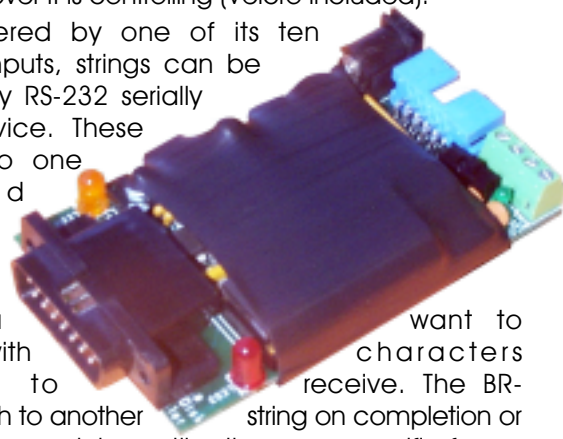
To configure the BR-SDC, you simply plug it into a serial port on your PC and fire up just about any modem program (such as HyperTerm, which comes with Windows). Built-in menus then allow you to tell the BR-SDC what will happen on each edge of each input, and set up the strings you want to be sent.

Built-in protocols can be used to control and synchronize Pioneer DVD and LaserDisk players, or Sony LaserDisks. You can enter your own strings to control other devices.
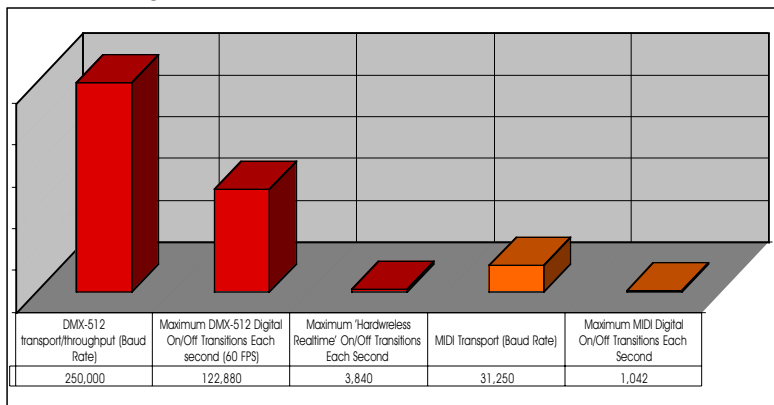
A Fountain Mystery

We were recently approached at a trade show by someone who builds fountains. This is in itself not all that unusual. What was different about this person is that they weren't already using our equipment to control their fountains. In fact, they were not even using an animation system to control the fountain. They were using a collection of MIDI devices, which were developed in Japan for controlling electronic musical instruments.

The problem this person had was that when they built a fountain, they could program two jets to turn on at the same time on their computer. What would happen with the real fountain was that there was a slight delay between which one turned on first. As the number of jets increased, this effect became more pronounced.

Their problem wasn't in their fountain or in a malfunctioning control system. MIDI was actually performing exactly as it was supposed to.

MIDI is a serial data format which has been strictly defined, much like the DMX-512 signals that we use in our Show Control Systems. DMX-512 calls for a maximum wire run length of about a mile, the MIDI specifications

DMX-512 transport/throughput (Baud Rate)	Maximum DMX-512 Digital On/Off Transitions Each second (60 FPS)	Maximum 'Hardwreless Realtime' On/Off Transitions Each Second	MIDI Transport (Baud Rate)	Maximum MIDI Digital On/Off Transitions Each Second
250,000	122,880	3,840	31,250	1,042

recommends a maximum of fifty feet between devices (although this is regularly exceeded). The speed difference starts with DMX-512 running at a peppy 250,000 bits per second. MIDI pokes along at only 31,250 bits each second. This is one eighth the speed of DMX-512.

To make matters worse, each standard MIDI "note on" and "note off" is sent as a separate three byte sequence. This means that each time an output turns off or on, a separate three byte long message is generated and sent by the MIDI controller. This slows the effective data rate by another thirty times. Since there is no error checking or correction allowed in MIDI, if a single message gets lost for any reason, an output can stay on (or off) until it is told to turn on (or off) the next time. This is called a 'stuck note' in the MIDI world.

The bottom line is that you can send only about 1000 "note on"/"note off" sequences in any one second. This is fine for a musician to play a synthesizer or three. After all, few keyboard players have more than ten fingers.

If you try to turn on 1000 fountain jets at the same time, the first one (as chosen by the MIDI controller) will turn on almost immediately. The final one won't be turning on until at least a second later. Any more events than this, and it

simply won't work on a single MIDI system. The show control will have to be multiplexed across several MIDI systems. As you are programming a MIDI control system, you will see completed parts of your show 'change' on their own as more MIDI commands are added. Many MIDI programs will just 'skip' some of your commands if they get too 'busy'.

For comparison, our systems using DMX-512 can update more than two thousand outputs sixty times each second without breaking a sweat. This is equivalent to 123,000 MIDI "note on"/"note off" sequences *each* second. Even our 'Hardwareless Realtime' mode, which uses the PC's serial port, has a throughput which is three times that of MIDI.

With an effective throughput which is about 125 times that of MIDI, if two (or two thousand) outputs are programmed to turn on during the same frame, they *will* turn on simultaneously. If a single frame is corrupted or missed, the outputs will ignore that frame's data and update the outputs on the next good frame that arrives a fraction of a second later. Once downloaded to a Brick System, there are NO limitations to the number of outputs that can be controlled simultaneously.

These are the reasons that we don't make very many MIDI devices. MIDI is just too slow and unreliable to do our type of 'industrial strength' show control.

most recent laptop computers. All it needs is a USB port.

Once installed, the MACs-USB will give you access to 'unlimited' programming through the PC·MACs programs. You can access up to 256 eight bit wide channels of data at the same time. These can be divided between as many as 2048 digitals, or up to 256 analog channels. Analog resolutions supported are 8, 12, 16, 24 or 32 bits. Features on the new MACs-USB include:

· There is no firmware preloaded on the MACs-USB at all! The latest firmware is automatically sent to the MACs-USB an instant after it is plugged into your PC's USB port.
· DMX-512 Output. Five position XLR. Optically isolated
· DMX-512 Input. Five position XLR. Optically isolated
· Smpte Timecode Input, RCA jack, Transformer isolated
· Smpte Timecode Output, RCA jack, Transformer isolated
· RS-422 Serial Port, RJ-12, Optically Isolated
· RS-232 Serial Port, PC compatible DE-09, Optically Isolated
· RS-422 LaserDisk control Port, RJ-12, Optically Isolated
· Serial Programming Console Port, RJ-12, Optically Isolated
· J8 Port w/four inputs and one output, RJ-12, Optically Isolated
· Powered by USB port (if possible), or included power supply
· LED indicators on ALL inputs and outputs. Twenty-seven in all!
· 8" x 6.25" x 2" tall case

Many people marvel at how easy our PC·MACs Show Programming Software is to use. What they don't realize is that one of the main reasons for this is that it was originally designed on a Macintosh, and so follows the Mac user interface standards.

So why doesn't PC·MACs actually run on the Mac OS? When PC·MACs was originally designed back in the 80's, there was no way to add output cards to Macs. Since the new MACs-USB would work on either platform, let us know if you would be interested in a Mac version of PC·MACs.

Getting Started with Gilderfluke Equipment

We are often asked what is the best way to get started using Gilderfluke equipment. The first several chapters of our PC·MACs manual are step-by-step 'quick start' instructions that will walk you through setting up and programming your first show. Our manuals are available on CD-ROM or can be downloaded from http://www.gilderfluke.com/PC-MACs_manuals.html.

If all you want to do is get a feel for the PC·MACs software and the OffLine editing screen, you can try out our free 'Software-Only' mode of operation. No other software or hardware is needed. This is described in chapter two of the PC·MACs manual. You can probably learn to program your first show in about an hour.

To see the results of their first programming efforts, most folks start off with a BR-MiniBrick8. At only $150, it is a good sized unit for controlling small shows or just to play around with. It has eight digital outputs and memory for about eighteen minutes worth of show data (at 30 FPS). Chapter five of the PC·MACs manual gives step-by-step instructions for sending your completed shows to a BR-MiniBrick8 or the 32 output BR-MultiBrick32.

Once you get the feel for what PC·MACs is like to work with, you will probably want to order the Hardwareless Real Time software license. This can be done over the phone, so there is no delay in moving on to this step. Chapter three of the PC·MACs manual gives complete instructions for this mode of operation. The license allows you to program the BR-MiniBrick8 in RealTime, using your mouse and keyboard as a 'programming console'. When you push a key on your PC's keyboard, the corresponding output on the BR-MiniBrick8 will turn 'On'! If you are in 'Record' mode, then whatever you do on the keyboard, PC·MACs will remember what you did and exactly when you did it. You can then polish your data using the OffLine Editing Window and tools.

The Hardwareless RealTime mode will allow you to program as many as 128 digitals or their analog equivalent. If you need to program shows which are bigger than this, you will need to get one of our Smpte Cards (either MACs-SMP or the new MACs-USB) and some form of programming console. We offer programming consoles starting at about $1100.

Chapter four of the PC·MACs manual gives step-by-step instructions for installing and programming in this 'unlimited' mode. Once the hardware is installed on your PC, you will be able to program up to 2048 digitals, 256 analogs, or their equivalent at one time. Larger shows are programmed by multiplexing systems.
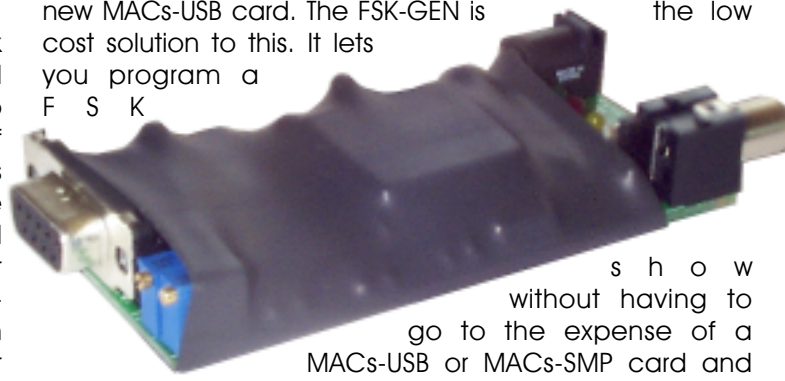
FSK & DMX-512 in Hardwareless RealTime

The Hardwareless Realtime mode of PC·MACs allows you to program up to sixteen 8 bit wide channels in RealTime using just the mouse and keyboard on your PC. Most of our cards that have serial ports on them now support this mode of operation. This new little adapter allows you to talk to up to sixteen channels worth of DMX-512 and FSK controlled output devices from a PC running a RealTime licensed version of PC·MACs.

DMX-512 is the universal standard for controlling theatrical lighting and dimmers. It is also the standard that we use for sending data between all of our equipment. Because the serial port on a PC is too slow to generate this type of data, a PC can't send it out by itself. The FSK-GEN adapts the serial output of a PC to the DMX-512 standards. It can be used to control our DMX-512 compatible cards as well as lighting equipment made by third parties from a PC running a RealTime licensed version of PC·MACs.

FSK is short for 'Frequency Shift Keyed' data. It is a way to store animation data on an audio tape, or more often these days, a digital repeater or CD. Although it was a common way to store show control data twenty years ago, it is now used in only the most cost conscious of installations. Typical of these are retail point of sale shows and similar installations. The whole audio and control system can consist of a Walkman and a BR-MiniFSK8 to control a simple figure or some lights.

Our MACs-SMP has a FSK output on it. We left FSK off the new MACs-USB card. The FSK-GEN is the low cost solution to this. It lets you program a FSK show without having to go to the expense of a MACs-USB or MACs-SMP card and programming console.

The FSK-GEN plugs into the serial port of any PC that is running a Hardwareless Realtime licensed version of our PC·MACs software. Most other low cost FSK systems require you to 'shotgun' program your whole show in one pass with no editing. This system allows you to use the full power of a PC·MACs system for even your simplest show programming. You can program your show using your mouse and keyboard as 'soft console', and then record the FSK data onto a CD, digital Audio Repeater or other audio media for permanent playback.

For your playback systems, you can use any CD player or Digital Audio Repeater and our BR-MiniFSK8 for eight digital outputs (or two for sixteen outputs) or a RTU/FSK unit for up to 128 digital outputs (analogs optionally available).

BR-MultiBrick32 with Lights

Although it has been in production for only about a year, The BR-MultiBrick32 has already become one of our best selling Animation Control Systems. With thirty-two digital outputs, this card replaces our previous record/playback bricks at less than half the cost.

Taking our cue from the new technologies first used on new Z-Brick, we have introduced a new BR-MultiBrick32. It's features include:

- LEDs on its front for indicating the status of all 32 outputs.
- LEDs for indicating status of the four PTC fuses.
- Self-Protected MOSFET outputs.
- Full-time DMX-512 data input.
- Full-time RS-422 serial port (no more 'Record' button to forget to push!)

The BR-MultiBrick32 can be used as a 'dumb' brick with four isolated trigger inputs, or a 'Smart' Brick controlled by a Smart Brick Network. You just throw a switch to tell it which way you would like it to run. When running as a Dumb Brick, the inputs can be set to start and stop or play specific shows.

The BR-MultiBrick32 comes with a standard capacity of over 130,000 frames. This works out to about seventy-two minutes of show data at thirty updates per second. This can be divided into as many as 255 different shows. In the unlikely event you need more memory capacity, memory chips with four times the capacity are already available, and even larger ones are coming soon. These will provide up to a 19 hour capacity!

While programming, data is sent to the BR-MultiBrick32 through its DMX-512 port or RS-422 port. The BR-MultiBrick32 supports the new 'hardwareless' mode of operation on PC·MACs. This allows you to program up to four BR-MultiBrick32s in real time, even if you don't have all the regular PC·MACs hardware and a programming console.

Programming the entire seventy-two minute capacity of a BR-MultiBrick32 takes about ten minutes. Downloading shorter shows takes less time.

Gilderfluke & Co.'s Greatest Hits On CD-ROM

We are now distributing all of our printed material and software on a single CD-ROM. Every manual, cut sheet, and piece of software we offer is all on one disk. These are available with most purchases, or for a nominal charge.

Hardwareless RealTime Programming Added

The Hardwareless RealTime mode of operation of PC·MACs allows you to program up to sixteen eight bit channels (128 digitals) using your mouse and keyboard as a programming console. No other hardware is needed.

Support for PC·MAC's Hardwareless RealTime mode has been added to most of our output cards that have serial ports on them. These include:

- SER-DMX for controlling sixteen RC ServoMotors
- BS-ANA for up to sixteen analog outputs at 8 or 12 bit resolution
- BS-Serial for Serial, MIDI or DMX-512 outputs
- BR-MultiShow for eight independent DMX-512 sequences

BR-SmartMedia..... continued from page 1:

have a capacity of about 2-1/4 hours of DMX-512 data if using 256 channels at thirty frames per second. You get about 136 seconds of storage per megabyte (256 eight bit channels at thirty frames per second).

As a BR-MultiShow, this card can play back eight completely different and independent DMX-512 sequences at the same time. Ten inputs can be used to trigger, stop, pause, or E-Stop any or all of the sequencers.

When operating as a BS-Serial, this card can send out DMX-512, serial data, strings, and MIDI. It has several specialized modes built in for controlling Moog motion bases, Intelix audio mixers, and other pieces of equipment. It can be synchronized with any number of other cards using the Smart Brick Network, or run independently when started by one of the ten optically isolated trigger inputs.

One of the most common uses for this card is to replace lighting boards in permanent installations. To help facilitate this, you can record DMX-512 directly into the SmartMedia memory. The BR-SmartMedia can then play pack the recorded lighting data whenever it is triggered.

Although this card supports the 'program in place' AutoDownload function from PC·MACs, we don't expect any but the smallest of shows to be programmed in this way. Why? Because it is much easier to slide the SmartMedia card into an adapter and program it directly in your computer. It is literally a 'drag and drop' operation, just like copying a file from one disk to another, and takes about the same amount of time. Programming 'in place' takes about eighteen minutes per megabyte.

Because SmartMedia is used in lots of cameras and MP3 players, it is available just about anywhere. You can pop over to your local CompUSA, Office Depot, or equivalent retail store and get your memory right over the counter. In most cases, you will find SmartMedia cards to be one of the most economical types of flash memory available.

And if your computer doesn't have a slot to accept a SmartMedia card? Adapters or an a variety of computers are widely available. USB and PCMCIA adapters are the most common, and least expensive ($50 to $100). You can even find SmartMedia adapters that allow you to program cards in standard floppy disk drives.

Gilder WEB Page

With the addition of a new T1 line, we have moved our web site to a little iMac at Gilderfluke Towers. With in-house web hosting, all documents are updated immediately.

Price lists, Manuals, Cut Sheets and even these newsletters (in color!) are available twenty-four hours a day, seven days a week from anywhere in the world at:

http://www.gilderfluke.com

Z-Brick........ continued from page 1:

outputs to be added to analog, servo and DMX-512 output systems. Some installations ended up using dozens of Z-Bricks, and a single analog or DMX-512 output card, simply because it was the least expensive way get a lot of digital outputs from a control system.

The first change to the new Z-Brick was to add DMX-512 input. This allows it to be used in applications where all the data is distributed by DMX-512, as well as applications that use BS-   A N A s and other cards which will source traditional Z-Brick data. The technology we used to do this is all compressed into one single little chip. This chip is effectively a big, complicated circuit board filled with counters, gates and registers. You can see from the photo just how empty this leaves the PCB! And with no microprocessor, there is not even a potential of a crash or lockup using this technology.

The final and most important changes to the Z-Brick are in the output drivers. Just about all of our digital output cards have used the ubiquitous ULN2803. As anyone who has ever shorted out a ULN2803 knows, it also acts as the fuse. If you short out an output, it is time to replace the ULN2803!

Starting with the new Z-Brick, we have switched to a new chip that uses eight FET transistors for the outputs. At one amp peak and 350 ma. continuous, these are rated to carry twice the current of the ULN2803 (but we aren't telling anyone about this).

Each FET output features a current measuring circuit which chops the outputs' duty cycle when faced with too much of a load. This acts like a little 'smart' circuit breaker on each output. With a short circuit, the output is instantly switched off. When the short circuit is removed, the output is instantly switched back on. If there is temporarily a little bit too much current (as when turning on a light bulb), the current flow is reduced. As the load resistance increases (this is what happens as a light bulb filament heats up), the current is automatically increased up to the full capacity of the chip. As before, all outputs include flyback diodes.
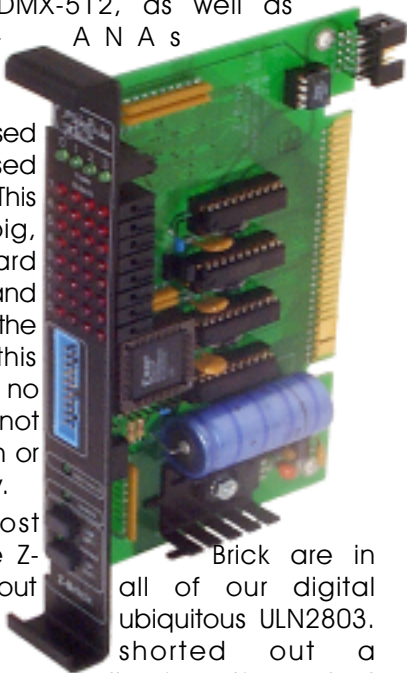
Classes Anyone?

Now that were are in the new spacious quarters at Gilderfluke Towers, we have the room and a permanent display area where we can offer classes in Gilderfluke Technology. We know that our stuff is pretty easy to learn to operate, but if there is sufficient interest in formal classes, they will be scheduled.

If you are interested in formal training classes on Gilderfluke & Company equipment, please contact Dru Smith at 818/840-9484.

Field Installation & Service

Gilderfluke technicians are available for installations worldwide. For installations outside our immediate area (Los Angeles, California and Orlando, Florida), you will need to pay all the usual transportation expenses (business class or better airfare, hotel, food, and a reasonable per diem) in addition to the fee for the technician.

Our Animation Control and Digital Audio Systems are designed to be as easy as possible to install. With hundreds of our systems installed each year, we are asked to actually go on site only a few times each year.

Gilderfluke Show Plans

We are scheduled to exhibit at the following trade shows and conventions in 2001. Most of the equipment described in this newsletter will be on display at these shows. We have free passes for many of them, so contact us if you would like to attend.

March 8-10 2001	NSCA (National Sound Contractors Association), Orange County Convention Center, Orlando, Florida
March 9-13 2001	Halloween Expo, Rosemont Convention Center, Rosemont, Illinois
May 31- June 2 2001	Show Biz Expo, Los Angeles Convention Center, Los Angeles, California
November 2-4 2001	LDI (Lighting Dimension International), Orange County Convention Center, Orlando, Florida
November 13-17 2001	IAAPA (International Association of Amusement Parks and Attractions), Orange County Convention Center, Orlando, FL

Our Two Most Asked Questions

In the eighteen 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***'.

Who Are We?

Gilderfluke & Company was founded in 1983 to build Animation & Show 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 currently deliver an average of more than one Animation & Show Control Systems a day. We are the only company that delivers complete, off-the-shelf Animation & Show Control Systems from stock. Most of our systems are bought by large Animation Manufacturers for incorporation into their shows.

Our PC·MACs Animation & Show Programming Systems were the first to run under Microsoft's Windows. It is still the technological leader among Animation Programming Systems. Our 'Brick' Animation Control Systems are the largest selling Animation &

Show Control Systems in the world. These are modular systems which can be used to control any sized shows you can imagine.

Our Digital Audio Systems are led 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. Audio systems with from two to thousands of outputs are available.

Our DR-50 and AB-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. The stand-alone AB-100 can be used for longer spiels.

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.