$14500.00

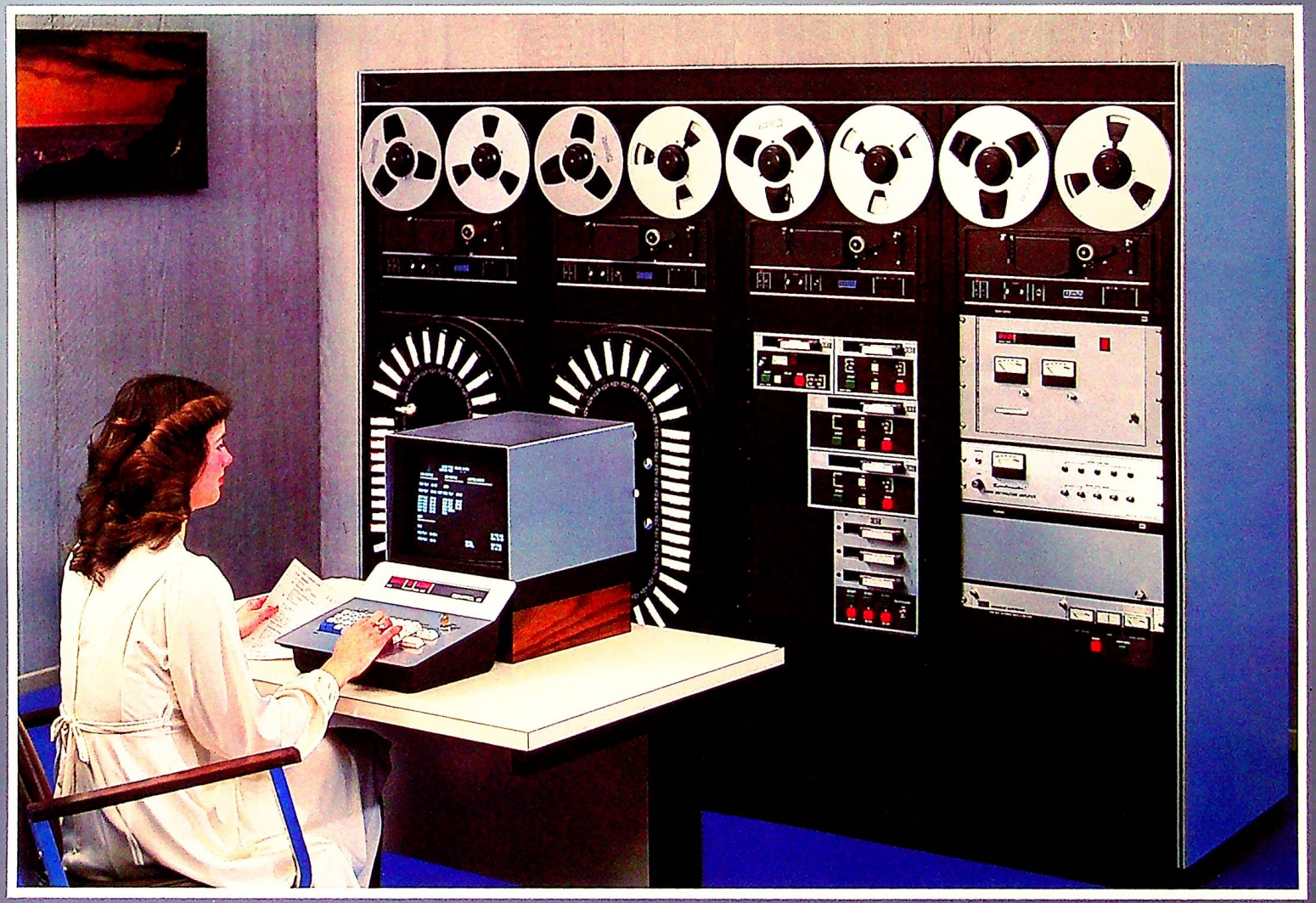
Broadcast Electronics, Inc.

a FILMWAYS company

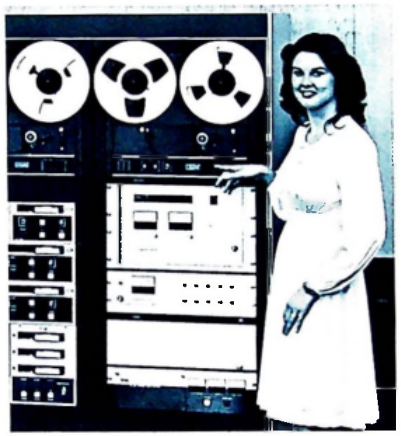
presents today's most advanced program automation control system

"THE INTELLIGENT ONE"

CONTROL 16



Why Was Control 16 Developed?



Today's broadcaster faces a complex and constantly changing program day. He confronts many hour-to-hour decisions that must be made quickly and intelligently...decisions that vitally affect his on-the-air programming, his image in the community, and his profits.

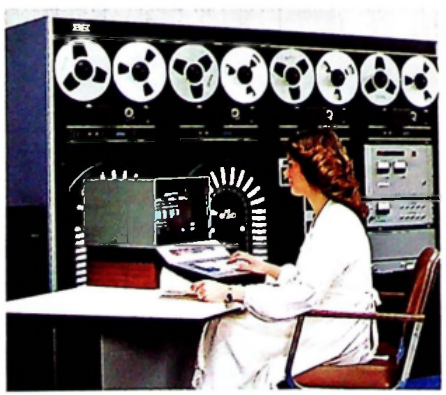
A need has existed for some time for an economical program control system that permits the broadcaster to easily control his on-air programming; at the same time, it should provide him with enough information to quickly make the right operating decisions. Control 16 is Broadcast Electronics' response to that need.

Control 16 is a new generation automation system with intelligence! It is versatile enough for the small and medium AM and FM stations, yet powerful and sophisticated enough for the disciplined major-market broadcaster. And it offers many broadcaster-demanded features not found in competitive systems — features that certainly will make your job of program control much easier.

"THE INTELLIGENT ONE"

CONTROL 16

What Makes Control 16 So Intelligent?



Control 16 provides full two-way communication with the operator...in plain English...via the CRT display. It tells him when a mistake is made during entry. It lets him know if he is telling it to do something that it can't do. It knows when the on-air format is not executed the way you intended it to be. And, it knows a lot of other things about what is going on.

The best part, however, is that Control 16 lets you know via an English description on the CRT display if something went wrong or if it needs help to correct an "alert" condition. It is this communication with the operator that gives Control 16 it's high degree of intelligence.

What To Look For In A Versatile Automation System

Choosing the right automation system is not an easy task. The five following areas will serve as a guideline for selecting program automation equipment. Any broadcaster who considers his needs in these areas and then chooses his equipment accordingly, will usually be pleased with his decision.

1. **Program Memory Considerations**
   This includes not only how many events the system has but also how the memory can be utilized—Sequentially, Main/Sub, Time Insertion, etc. Memory considerations must also include how many different functions can be programmed with each event; usually the more functions available the more creative your programming can be. Not all systems allow programming of additional functions with events, so be sure and ask.

2. **Time Related Considerations**
   This includes not only the memory capacity for storing time entries but also how many functions can be executed on a real time basis. Here again, the greater the variety of functions available, the more creative your programming can be. The system should also make it easy for you to review the time entries in memory.

3. **Operator Assistance Considerations**
   This includes full two-way communication between system and operator. The system should let the operator know when data is invalid, when an event is aborted, when the log printer loses power, or some other alerting condition exists. You will want a system that makes it easy to reconstruct a programming malfunction so you can quickly determine exactly what happened.

4. **Manual Over-ride Considerations**
   This includes capability for inserting bulletins as a single event or as a cluster of events without reprogramming. Make sure the system includes the capability to be fully controlled (start, stop, fade, program the memory, etc.) from the studio or control room for operator assistance during periods of live programming.

5. **Program Logging Considerations**
   This includes the speed at which the logging data is printed. It must be fast enough for those short jingles and spots. Ask what diagnostics and English descriptions are printed for abnormal operation. You will generally want a record of everything that actually happened.

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Operational Highlights...*Control 16 can do what others can't!*

Control 16 is a versatile management tool for effective program control. This unique program control system has the ability to smoothly handle even the most difficult program assignments. Formats such as **All News, Religious,** and **Voice Track** are carried out to perfection without any compromising. The precision of Control 16 produces a technically consistent on-air sound that is hard to match by live programming. The features described herein—many of them exclusive to Control 16—describe how this new generation system can improve your station's programming.

Versatile Programming

All three popular methods of station programming can effectively be carried out...**Sequential** (when using cartridge music), **Main/Sub** (when using syndicated reel-to-reel music formats), and **Time Insertion** (when programming a loose format). You decide which method best serves your needs. All three are standard.

Easy Source Substitution

Any source can be substituted for any other source! Source substitution avoids having to reprogram the memory should a source machine ever become defective. Simply substitute some other source to play in place of the defective source!

Automatic Memory Search

Let Control 16 do the work. Any commercial announcement can be quickly searched out for deletion or reprogramming. The memory can be automatically searched for any source or any specific source and shelf.

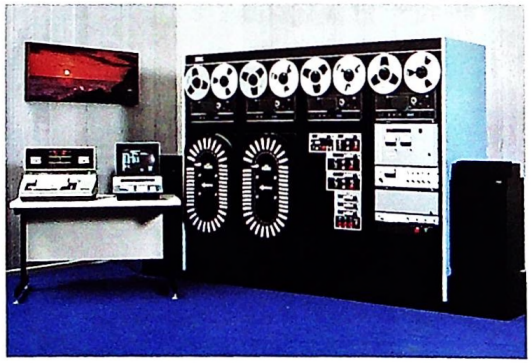
Instant Display of Aborted Events

Aborted events are instantly displayed with an English description of exactly what happened, where and why. There are 8 conditions that will cause an aborted event and each is fully displayed on the CRT:

- Source Power Off
- Silence Sense
- Power Failure
- Source Card Out
- Machine Error
- Disabled
- Source Not Ready
- Repeated Source

Unique Special Event Insertion

Two Special Event Insertions can be preprogrammed and inserted into the normal program sequence either manually or by time. Either Special Event Insertion can consist of a single event or a cluster of events. The exclusive cluster capability provides for a bulletin open/report/spot/report/bulletin close to be easily sandwiched into the normal program sequence without reprogramming. The insertion can also be reinserted as often as necessary without having to reprogram each time.



Convenient Voice Track and Time Announce Disable

Both the Voice Track and Time Announce Decks, if used, are automatically disabled following a power failure, to avoid playing the wrong voice cut or time announcement on the air.

Data Error Sensing

The operator instantly knows when invalid data is being programmed. The word **Invalid** appears on the **CRT** and the keyboard sounds one pleasing beep. Programming a source to play back-to-back without the back-to-back function will cause a **Repeat Source** error.

Control 16's Data Error Sensing makes it virtually impossible to enter erroneous event or time data from the keyboard.

Flexible "Go To" Command

Control 16's unique **"Go To"** Command allows storing any number of program formats for later use. They can be easily called for at any time by the **"Go To"** command. No jump table or hard wiring of sub memory to restrict your programming creativity.

Self-Correcting Digital Clock

The crystal reference digital clock samples line frequency over a long period of time and feeds slight corrections back to the crystal, producing a highly stable time reference which has self-correcting capability. This self-correcting feature ends periodic clock resetting.

Universal Source Card

A universal source card provides interchangeability between reel-to-reel and cartridge sources. This universal source card features:

- 25 Hz sensing for reel-to-reel sources
- voice track update
- on-air tally signal
- end of tape (reel-to-reel) alerting circuit
- extend or defeat option of the system silence sensor
- 8 **LED** status indicators for diagnostics

Unique Dual Processor Concept

Control 16's unique dual processor concept provides for limited **automatic** operation during emergency conditions. Should the main processor ever fail, the keyboard can be plugged directly into the Audio Control and up to 64 events programmed.

Simple Automatic Restart

Control 16 automatically restarts following a main AC power failure. If power is off less than 2 minutes, the next source is called on automatically.

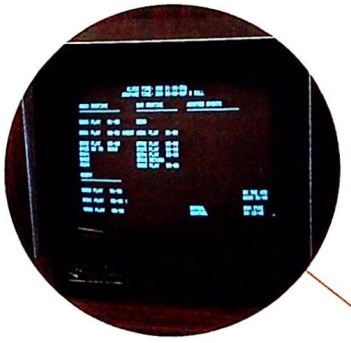
Seven Day Compare Time Memory

Control 16 has an advanced design seven day compare time memory with a capacity for storing **500** time entries with 18 functions for programming the long weekends.

CONTROL 16

Automatic Program Control System

These components work together to provide today's most advanced program automation system ...and the most intelligent!



Five Exclusive Video Displays

For making intelligent programming decisions quickly and easily.

- **Program Display** for monitoring on-air programming, and entering, editing, or reviewing other program events and compare times.
- **Assignment Display** for making initial system assignments such as Time Announce, Back Time/Dead Roll, Voice Track, etc.
- **Log Display** for reviewing the last 10 lines of program logging data.
- **Events Display** for reviewing the sequence of any 96 program events.
- **Compare Time Display** for reviewing the chronological order of any 72 compare times.

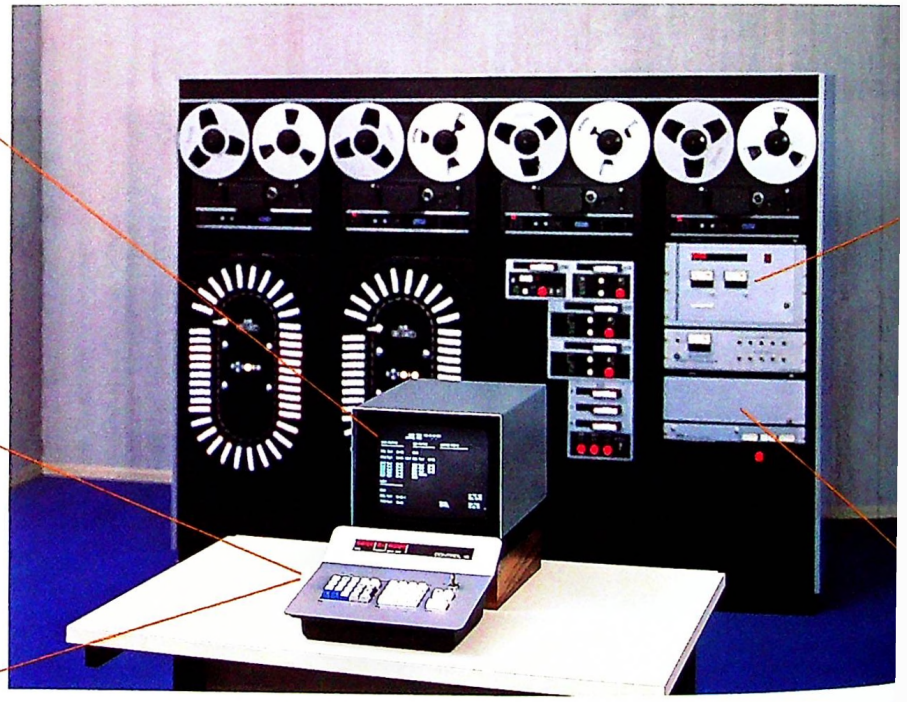
Lightweight, Portable Keyboard

The lightweight keyboard can be located anywhere within the station up to 175 feet from the system.

- Engineered for logical and easy operation.
- Only 39 key switches in all—20 Mode Keys, 16 Data Keys and 3 Control Keys.
- Operator Assist Error Sensing for assisting the operator in learning keyboard operation.
- LED display for next-to-run event, reviewing events or setting the digital clock.
- Three-way Electronic Lock prevents unauthorized access to the memory.

Announcer Assist Remote Control

Control 16's portable keyboard puts the announcer in full command of music, commercials and other program material stored in the automation system. Any number of events can be set to seque automatically, giving the announcer time for other duties during periods of live programming. All events from the system, even during live programming, are automatically logged.



Battery-backed Power Supply

The power supply used in Control 16 features heavy duty components for a high degree of reliability. It also has battery backup for memory retention during power failure.

Convenient Customer Panel

For easy access to system inputs/outputs. Includes:

- Ten watt stereo monitor amps for clean, crisp audio.
- Four relay circuits for remote alerting of **Next Source Not Ready, Logger Failure, Transmitter System Off The Air,** and **Aborted Event.**
- Stereo Program and Mono Mix outputs at +18 dBm, balanced 600 ohms.

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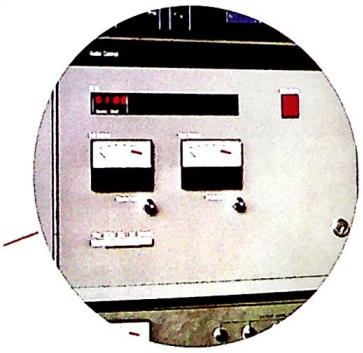
Options:

Microprocessor Audio Control

One of Control 16's two new generation microprocessors is located in the audio control. It makes decisions for proper program execution and checks system status for alerting the operator. Other features include:

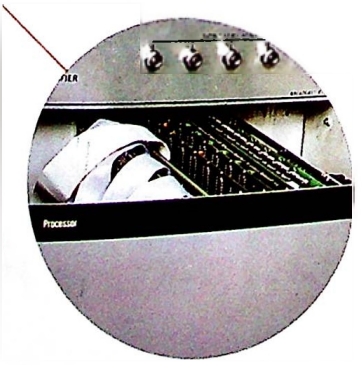
- Full system audio monitoring with left and right meters. Pushbutton selector switches for monitoring **Program, Off-Air, Cue,** and **External.** Each can also be monitored in the SUM/NULL mode.



- Front panel digital display of on-air source and shelf.
- Front panel indication of the EOM (End of Message) from the on-air source.
- Front panel alarm indicator and reset switch.
- Self-correcting 12/24 hour digital clock with one pulse per second output for external use.
- Dual Program Bus with adjustable level reduction for voice-over.
- Dual Silence Sensing of system's audio and of the off-air audio.
- FSK logging decoder with 10 line data buffer.
- Easy access to switches, and level controls located on back of swing-out front panel.
- Capacity for 16 sources, including a dedicated 600 ohm balanced input for network. Source capacity can be expanded to 32 or 47 sources.

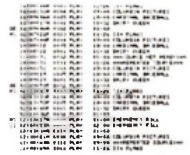
New Generation Main Processor

Control 16's main processor includes one of the system's two identical high-performance microprocessor boards. This microprocessor checks entries for error; communicates with peripheral computer or printer for automatic memory, loading or printing; stores your program format and commercial load as entered from the keyboard; and sorts compare times into chronological order. Other features include:



- 3000 event Program Memory expandable to 10,000 events. Standard memory is capable of storing advance programming for several days. Any one of **11** functions can be programmed with each event for creative programming.
- Seven day, Compare Time Memory for storing 500 compare times. Repetitive daily and hourly entries greatly expand the compare time capacity. Any one of **18** functions can be programmed with each compare time for versatile time control.
- Plug-in circuit boards located in slide-out chassis for easy access.
- Includes port for memory loading and printing, or for external business system.

Easy to Start with - Easy to Grow with...
Personalize the System to meet your requirements



(1)

(2)

(3)

(4)

(1) **High Speed Program Logging:** Optional high speed English logging provides printout of your program log plus 6 diagnostic codes and 9 full English descriptions representing abnormal operation. Logging data is encoded on the tape at 30 characters per second, using Frequency Shift Keying (FSK) reliability. This high speed permits printout of a complete 80 character line in approximately **3 seconds.** Even short jingles can now be encoded with a full line of data. The logging decoder and 10 line buffer are standard in Control 16.

(2) **Additional Keyboards:** Three keyboards can be added simply by plugging them in. Keyboards operate on a first-come basis, locking out other keyboards. **Each Keyboard** may be located up to 175 feet from the system.

(3) **Additional Monitors:** Any number of low cost monitors can be daisy-chained up to a maximum distance of 500 feet from the Master CRT.

(4) **Memory Load Print:** The electronics for memory load print are standard. Only the terminal is optional, and provides for advance preparation of program data on a digital cassette for later loading into the automation system's memory. Any event loaded with invalid data during the load operation will be **flagged.** This flag appears as an asterisk next to the event. An exclusive feature of Control 16's Load/Print electronics is the capability of printing only the flagged events. Events can be loaded in any random sequence. Any specific group of events can be printed without having to print or dump the entire memory contents.

Relay Panel: Up to 32 relays can be controlled for switching functions external to the system. Delay recording of network news for later playback is one example.

Source Expansion: The source capacity can be expanded to 32 or 47 sources by simply plugging in one or two source expander units.

Memory Expansion: Memory capacity can be expanded to 10,000 events in 2,700 event steps by simply plugging in additional RAM memory boards.

Source Equipment: A variety of reel-to-reel, random access, and single cartridge source equipment is available to meet your needs.

Future Options: Additional options are being developed now and will be available in the near future. Control 16 is easy to grow with!

You have Intelligent Communication with Control 16

Five exclusive video displays provide all the information for making intelligent programming decisions.

Program Display

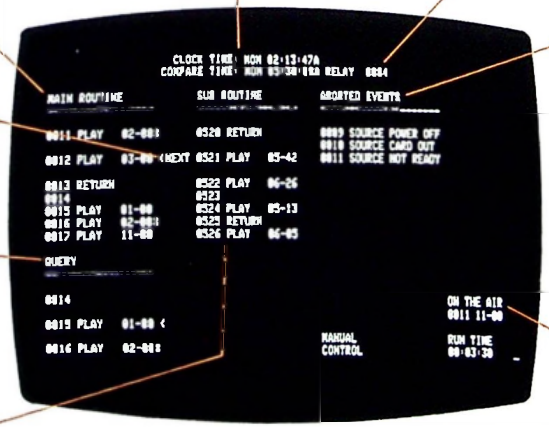
Main Routine
Main Routine displays the memory location of the on-air programming from the **Main Routine.** The next event to go on the air from the **Main Routine** is shown beside the word **Next.** The previous and 5 following events are also displayed for the **Main Routine.** Each event displays an English description of the function, along with the source/shelf numbers or a **Go To** address, or simply a relay number.

Next
The arrow by the word **Next** indicates the **Next** to run event from either the Main or Sub Routine. The word **Next** will flash when the next source is not ready.

Query
Query displays the event being queried for review or programming. The previous and following events are also displayed.

Sub Routine
Sub Routine displays the memory location of the on-air programming from the **Sub Routine.** The next event to go on the air from the **Sub Routine** is shown beside the word **Next.**

Clock Time
Clock time is the real time digital clock and shows the **Day, Hours, Minutes,** and **Seconds** in either 12 or 24 hour format.



Compare Time
The next Compare Time to take place is displayed by **Day, Hour, Minutes,** and **Seconds** in either 12 or 24 hour format, along with an English description of the function that will occur.

Aborted Events
Aborted Events are instantly displayed. The exact event aborted is indicated by its event number, along with an English description of the cause. Eight conditions will cause an aborted event and will be displayed: **Source Power Off, Source Card Out, Source Not Ready, Silence Sense, Machine Error, Repeated Source, Disabled,** and **Power Failure.**

System Status
System Status displays the **On-The-Air** event number, along with the source and shelf. **Run Time** of the on-air source is also displayed. There are additional English descriptions that will automatically appear: **Voice Track Disabled, Update Hold, Keyboard Busy, Logger Failure, Manual Control, Load Error,** and **XMTR SYS OFF.**

Special Event
Special Event will automatically appear when a special event insertion has been called to run.

Substitution
Substitution will automatically appear when a source substitution is made, along with the numbers of the sources involved.

Programming — *Powerful, Yet Simple*

Assignment Table Display

Initial system assignments are easily made from the keyboard while viewing this display. Unlike most other systems, Control 16's source assignments for Time Announce, Back Time/Dead Roll, Voice Track, etc., are done in software for easy changing should the need arise.

Program Log Display

The last 10 lines of logging data are easily called up for display from the keyboard. Logging data shown will be exactly like that printed on the program log printer. Up to 24 lines of logging data will be shown if display is left unchanged. Programming can now be checked from virtually anywhere in the station to see if events are playing as scheduled.

Events Display

The sequence of any 96 program events starting at any one of the 3000 events in memory is easily called up from the keyboard. Each event shows the function, source and shelf information programmed. This is a handy display for quickly and easily reviewing program information.

Compare Times Display

The chronological order of any 72 Compare Time entries in memory is easily called up from the keyboard. This is a convenient display all operators will appreciate.

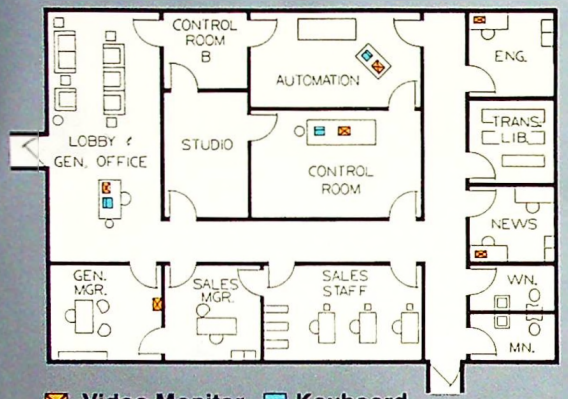
Each program event can be programmed with any one of 11 functions!

- **Avail** - leaves the event blank for later use.
- **Play** - plays this event normally.
- **Link** - links this event to previous event and will not be interrupted by a time update.
- **Multiple Start** - this event will start simultaneously with previous event.
- **Back-To-Back** - source can play back-to-back without stopping.
- **Update** - is the event the memory jumps to when receiving a **Jump** command from the Compare Time.
- **Stop** - places the system in the manual **Stop** mode.
- **Go To** - commands the memory to **Go To** the indicated event.
- **Return** - commands the memory to return to the other routine.
- **Preroll** - starts the indicated source off the air and transfers its 25Hz sensor to right channel.
- **Relay** - pulses the indicated relay for external switching.

Each compare time can be programmed with any one of 18 functions!

- The compare time functions of: **Stop, Go To, Return, Preroll,** and **Relay** - execute the same command when programmed as an event function.
- **Delete** - is used to delete for one specific day or hour a repetitive daily or hourly entry.
- **Start** - places system in **Auto** mode and will start the next source if a source is not already on the air.
- **Jump** - is the command to jump the memory to the next **Update** event. The **Jump** command is the means of approximate time update of memory.
- **Fade #1** - will cause the on-air source to be faded out. The memory is also instructed to **Jump** to the next **Update** event and to **Start** the next source. The **Fade #1** command is a means of exact time update of the memory and is one way of joining network news.
- **Fade #2** - will cause the on-air source to be faded out and the system to be placed in the manual **Stop** mode.
- **D Roll** - starts the Dead Roll source off the air and **Jumps** the memory to the next **Update** event. The **Dead Roll** command is a means of exact time update of the memory and is one way of joining the network news.
- **Limit** - Dead Roll **Limit** is used to force the Dead Roll source on the air if needed.
- **Net EOM** - this command provides the end-of-message (EOM) signal for network.
- **Load** - is the command to **Load** memory from an external cassette device or business computer.
- **SE #1** - is the command to insert **Special Event #1** on the air next.
- **SE #2** - is the command to insert **Special Event #2** on the air next.
- **Defeat** - is the command to **Defeat** the Compare Time memory from executing any more Compare Times.
- **Enable** - is the command to **Enable** the Compare Time memory.

Application



Video Monitor Keyboard

Station managers will find extra keyboards and monitors can be effectively and economically used throughout the station. Control 16's versatile design of a separate keyboard and monitor lets you decide where each will be most useful.

An extra keyboard and monitor pair is usually quite effective out in the lobby or reception area where the secretary is in charge. The secretary can make the few day-to-day program changes and watch over the system's operation.

Should your program schedule call for several hours of live programming, such as telephone talk shows, an extra keyboard and monitor pair in the control room is very convenient. The announcer can easily use the automation equipment for all the music, commercials, jingles, etc., providing more time to be creative and alert to the demands of live programming.

The general manager will probably need only a monitor in his office to keep attuned to what's happening.

The news booth might also have only a monitor. The newsman can then monitor program progress and be fully prepared for inserting a live newscast.

With Control 16, the choice is yours. Keyboards and/or monitors can be placed where they will be most effective.

Control 16 is not just another program automation system...

it's Today's Intelligent Control System

Broadcast Electronics is proud to introduce the first "intelligent" program automation system to the broadcast industry. Control 16 provides more versatility in programming and in time-oriented operations than any system currently available. And here's why:

"Intelligent" Two-way Communications. Control 16 is unmatched in its ability to provide information to the operator—in plain English—as to what the system is doing, or why it did not do something it was supposed to do. The operator assist error sensing and data error sensing make learning to operate Control 16 simple.

Unlimited Creativity. Control 16 provides the broadcaster with 3000 program events which can be combined with 11 functions for optimum creativity! You can use either Sequential, Main/Sub or Time Insert programming, depending on your requirements.

Advanced Compare Time Capability. Control 16 offers an advanced compare time capability with a capacity of **500** entries! Any one of 18 functions can be programmed to command the system's memory on what to do, on a time basis; in addition, it can switch on or off equipment external to the system, such as delay network recording or reminder alert signals.

Flexible Operation. Only with Control 16 can you insert a bulletin consisting of a cluster of events. Control 16's portable keyboard can be located anywhere in the station, providing full control of all sources in the system. And operator assist makes live programming a breeze!

Informative Logging. Control 16's optional program logging is the most advanced and informative available. Operating at high speed (300 baud), even short carts can be encoded with a full logging description. Not only does it provide a permanent record of what played on the air, it also shows what was scheduled and **did not** play...and the reason for the discrepancy.

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