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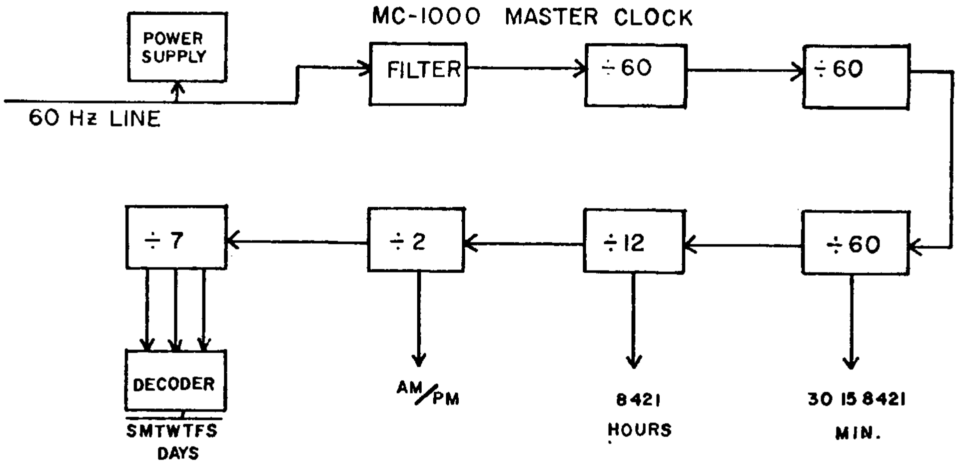
A NEW APPROACH TO ALL-DIGITAL NON-DUPLICATION SWITCHING

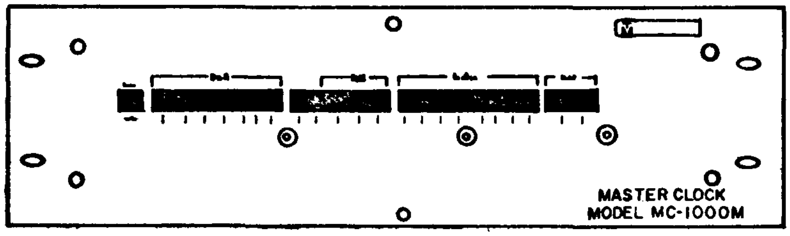
The TMP-1000 electronic programmer is designed to perform repetitive control functions such as CATV non-duplication switching when a schedule is repeated on a weekly basis. The programmer operates on the elasped-time principal. This means that the stop and start times of each event are programmed by the operator, rather than occurring at arbitrary intervals as with pulse-time systems. This permits programming the start and stop of each event to each selected minute throughout the day.

Digital electronics are used in a unique manner in the TMP-1000 to provide the benefits of larger, more expensive programmers that rely on disc, core, or tape storage, while maintaining a price competitive with the more limited pegboard programmers. Another important advantage of this design is in the elimination of moving parts which increases reliability.

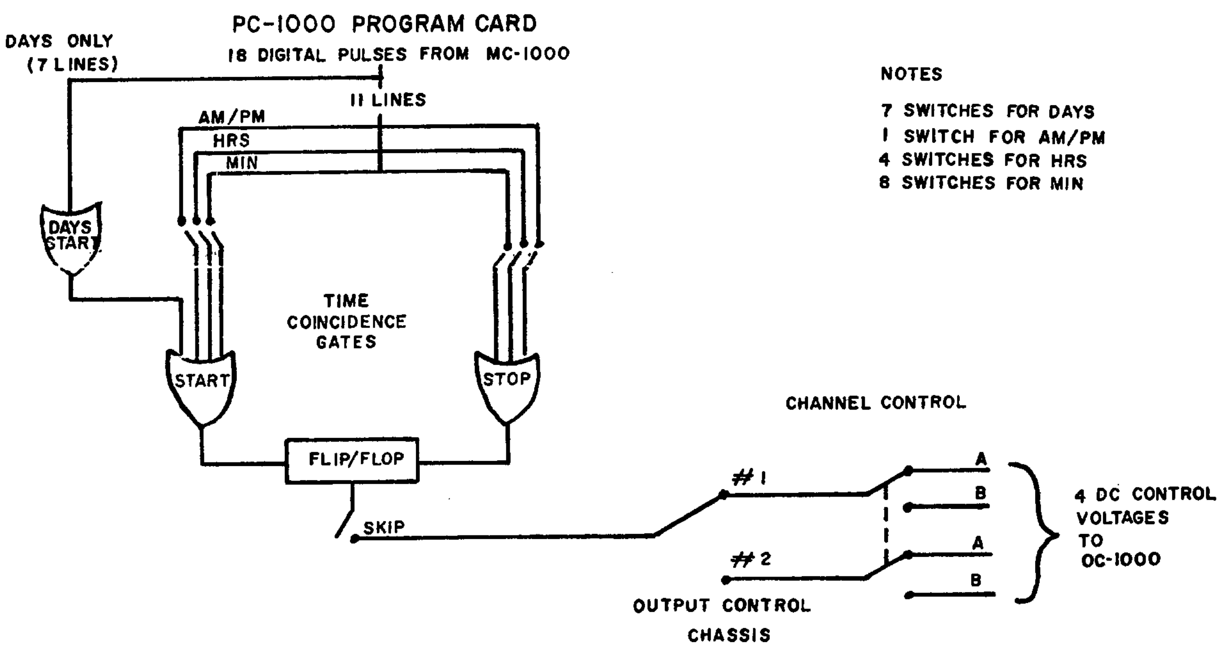
The TMP-1000 system consists of four basic components. They are: The MC-1000M Master Clock that provides timing signals and DC power for the system; the OC-1000 output control with its two-channel control relays; the EE-1000 event expander which expands the event capacity of the OC-1000; and the PC-1000 program control card which contains the programming and memory elements to start, maintain, and stop each event.



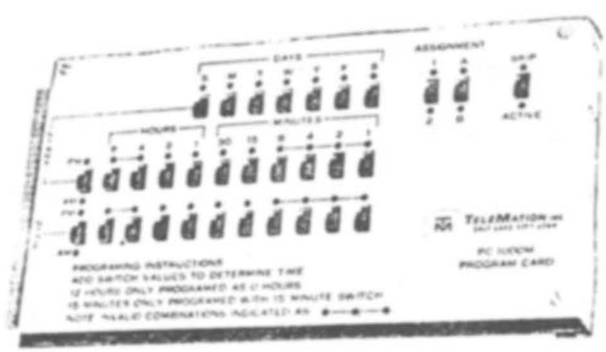
The heart of the system is a digital master clock, Model MC-1000M which counts down from the power line frequency. The frequency dividers are: Divide the power line frequency by 60 for a signal with a period of one second; then a divide by 60 gives you a minute period; a divide by 60 to obtain one hour period, and this frequency divided by 12 to get one-half day period. A divide by seven and decoder circuitry is required to obtain days. The output from the MC-1000 is then routed to the OC-1000 by ribbon wire, then to the PC-1000 Program Control Cards. The front panel controls for the Master Clock are three push-button switches which are used to set the days/hours, minutes, and seconds.



To set real time with the master clock, depress the day/hours control and advance the time to the proper day, AM or PM, and hours. Then depress the minute switch until proper time is indicated in the read out window. The "hold seconds" push-button is used to stop the digital clock in order to match the Master Clock to real time. This also clears the second counters so when released it starts at zero seconds. The indicator to the far left on the Master Clock is used to notify the operator of a momentary power failure; if so, the indicator light will flash and real time must be reset.

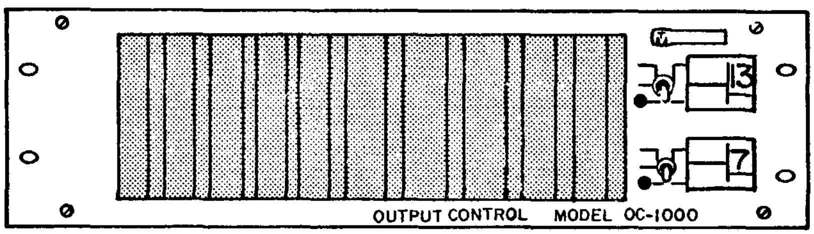


The PC-1000M Program Card controls one complete switching event from start to stop. This card also permits selection of day or days of the week that the switching event will occur. The 18 digital pulses from the Master Clock are routed to the days-only gate through the selected day switch. Eleven lines are then routed to the start time coincidence gates through the selector switches for AM or PM, hour, minutes switches. If one of the programmed days is the same as the day indicated by the Master Clock and the programmed start time is the same as the indicated real time, a pulse is fed to the flip-flop. The flip-flop acts as a storage device, and a DC voltage is then fed to the output control for the appropriate channel switching. This flip-flop will stay in the on condition until a stop time coincidence occurs. At this time the flip-flop will turn off. A pulse from the days gate is not required to achieve a stop time coincidence. A skip feature is built in to eliminate complete program card programming if a particular event requires no protection. If the skip feature is used, a front panel light will indicate to give you a record of the skipped event. An active light indicates on the front panel of the Program Card if a switching event is in progress.



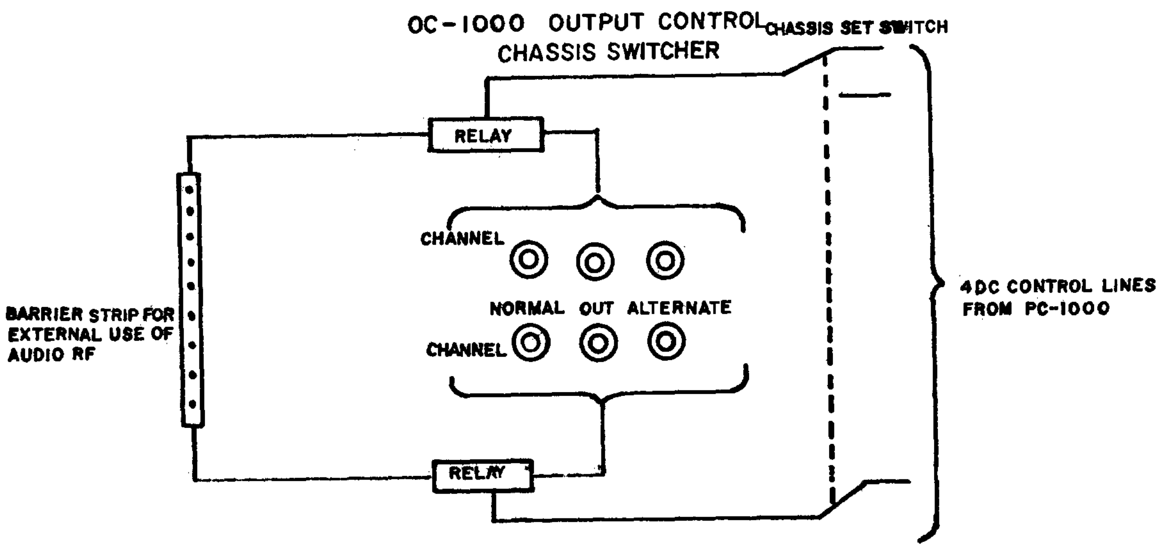
The output from the Program Card can be assigned to any of four different channels, depending on the placement of the assignment switches directs the output of the assigned output control chassis or OC-1000.

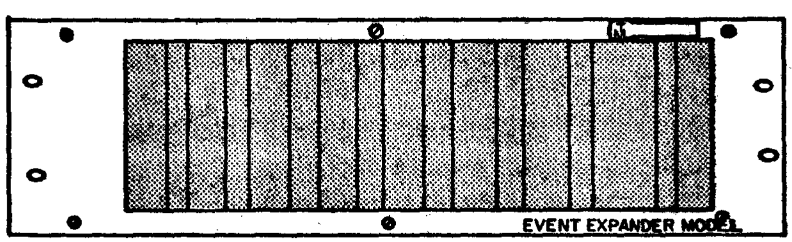
Each OC-1000 provides two channel protection, selected by the "A" and "B" switches. The four DC control voltages from the Program Card are then routed to the appropriate Output Control Switcher for relay switching.



The output Control Chassis, Model OC-1000, provides output switching capability. Front-panel switches are provided to allow operator manual override selection of either the "Normal" or "Alternate" input, or the automatic mode of operation.

The reference guide located by the selector switch gives you a log as to which sources can be switched to the output channel. In the alternate and normal mode these sources are routed to the output channel. In the auto mode you revert back to the program card. Circuitry is provided to directly switch video, with proper termination of the unused input. Additional contacts permit switching associated audio or RF control voltage. Video connection is by means of type BNC connectors, and barrier strips are supplied which switch either internally supplied +24 VDC or may be strapped to switch voltage from an external source. Each output control accommodates up to twelve program cards.





Event Expander Chasses, Model EE-1000, are available to accommodate additional Program Cards when the number of switching events designated to a given output exceeds the card slot capacity of 15 provided to allow a Program Card to be delegated to operate with either output in either of two associated OC-1000 Output Control Chasses. The Event Expander Chassis is a passive device, and may be connected as necessary to extend system event capacity.

Interconnection of the master clock with the output control and the Event Expander Chassis is made with a flat multiconductor ribbon wire. Sufficient length of this interconnecting wire is supplied with the Master Clock for future expansion. Connection of the ribbon wire to the Output Control and Event Expander Chassis is by means of a connector provided on the Output Control and Event Expander units. This convenient and easy-to-assemble wiring technique allows for rapid field connection of the component parts of a TMP-1000 System.

The TMP-1000 System has a capability of system expansion to six OC-1000s and fifty Program Cards which offer 700 switching events weekly for non-duplication.