

GEMINI



The systems people

ELECTROSONIC

INTRODUCING "GEMINI"

GEMINI (ES461) is an audio visual presentation unit for use with two automatic slide projectors. It can record and replay combined slide projector and sound programs, without the need for any external equipment, other than the projectors themselves and a loudspeaker.

GEMINI incorporates the ECLIPSE dissolve unit; an audio visual cassette tape recorder with provision for separately recording the audio and control signals on different tracks of the cassette tape; and a powerful 20 watt audio amplifier suitable for large audiences; all built into an elegant compact housing. The unit packs neatly into a strong handsome case fitted with foam inserts and cutouts for accessories (ES464).

GEMINI is designed to work with various models/types of automatic slide projectors.

ES461A is GEMINI supplied with 2 ES4A adaptors for use with European Kodak Carousel SAV2000, 2020, 2030, or 2050 projectors.

ES461B is GEMINI supplied with 2 ES4B adaptors for use with Eastman Kodak Ektagraphic III projectors.

ES461C is GEMINI supplied with 2 ES4C adaptors for use with Eastman Kodak Ektagraphic II and Ektagraphic III projectors; and with some other projectors fitted with the same dissolve socket. In this case mechanical detection of zero position is not available.

ES461 is GEMINI supplied without any adaptors. It is then suitable for use with the ES4050 Electrosonic modified version of the SAV2010 projector. It is also suitable in principle for use with various other projectors. See section "Use with Alternative Projectors"; but this must have been discussed with your dealer before purchase.

GEMINI has a built in monitor loudspeaker which is useful for programming and preview purposes, but is not intended for use in actual shows. Users may either provide their own (8 ohm) loudspeaker or use one of the Electrosonic loudspeakers that have been chosen to give high quality results from compact lightweight enclosures.

SETTING UP GEMINI

Please make yourself familiar with the projectors you are using before setting up with GEMINI. Depending on which projectors you are using, the system you are aiming to set up is shown diagrammatically in Figure 6.

DO NOT SWITCH ON MAINS POWER UNTIL ALL CONNECTIONS ARE COMPLETE.

First check that the mains voltage selector on each projector is set correctly (usually 220V in Europe, 240/250V in the United Kingdom, and 110V in the USA).

Then check that the voltage selector on the underside of GEMINI is correctly set. 115 is suitable for use in the range 90 — 130V 50/60 Hz. 220 is suitable for use in the range 180 — 260V 50/60 Hz.

If you find that you need to change the voltage selector, then check also that the fuse next to the mains input connector is the correct value. In the case of Carousel SAV series projectors and some other projectors with voltage selectors there may also be a need for a fuse change in the projector. See the projector handbook.

In the case of European Carousel projectors Models 2020, 2030 and 2050, set the side switch on the projector to "EXT".

In the case of Eastman Kodak Ektagraphic projectors set the lamp switch to "FAN".

Now position the two projectors so that they are both pointing at the screen, and that their lenses are as close together as possible. They can either be placed side by side; or one above the other, using a "twinning stand" (ES2011). It is usual to designate the projectors "A" and "B"; and a useful convention is that the "A" projector is the left hand projector when looking towards the screen in the "side by side" configuration, or the top projector in the "stacked" configuration.

Now connect the two control cables attached to GEMINI to the two Carousel adaptors. You will notice that each cable has a sleeve on it, identifying it as the "A" or "B" control cable.

If ES4050 projectors are being used, the adaptors are not necessary; and the control cables plug directly into the appropriate socket on the back of the projectors. (See Figure 7.)

Connect the power cables from the two projectors to the "projector mains outlets" on the back panel of GEMINI. In the case of ES461A GEMINI suitable cables are provided. If for any reason you are unable to use these outlets, then it is important that the projectors are powered from the same outlet as GEMINI itself.

If using an extension loudspeaker, connect up using the "loudspeaker output" socket on the back panel of GEMINI. (Connection here automatically disconnects the internal monitor loudspeaker.)

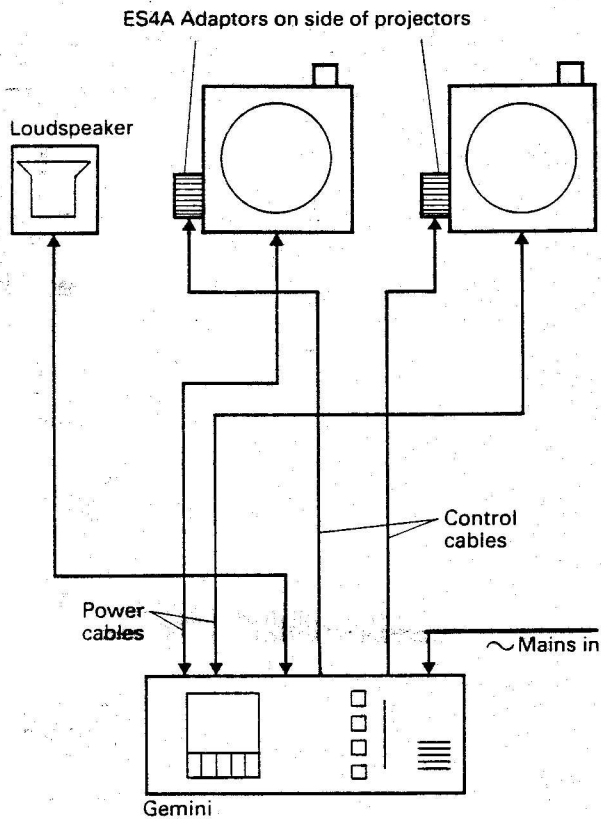
Connect the mains power cable to the "mains input" connector on the back panel of GEMINI; and switch on the adjacent power switch. If the projectors have built in power switches, switch these on too.

IF YOU ARE ONLY CONCERNED WITH REPLAYING AN EXISTING SHOW, THEN READ THE NEXT SECTION "REPLAYING A SHOW".

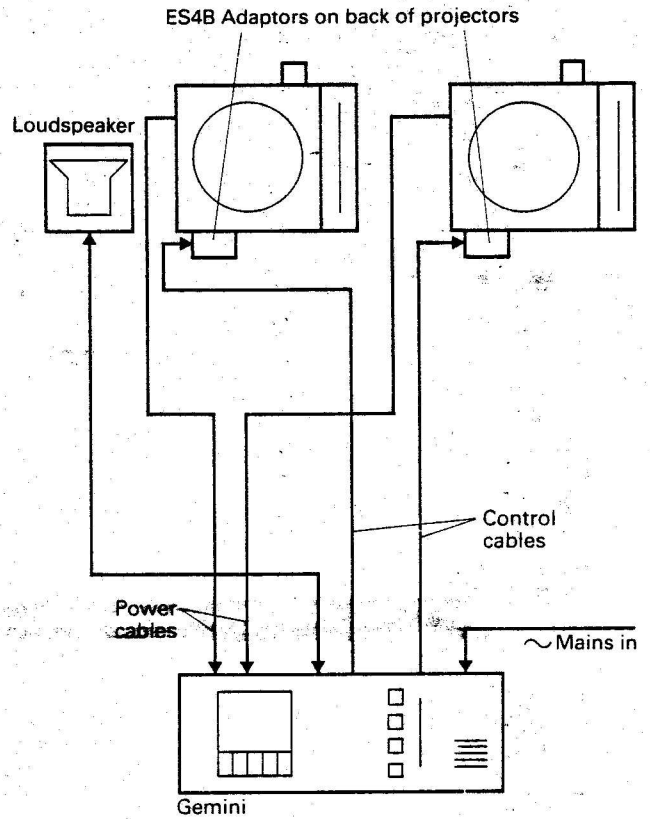
IF ON THE OTHER HAND, YOU INTEND MAKING AN AUDIO VISUAL SHOW, PLEASE READ THE PREVIOUS SECTIONS ON ECLIPSE AND THEN PROCEED TO "RECORDING A PROGRAM ON GEMINI".

REPLAYING A SHOW

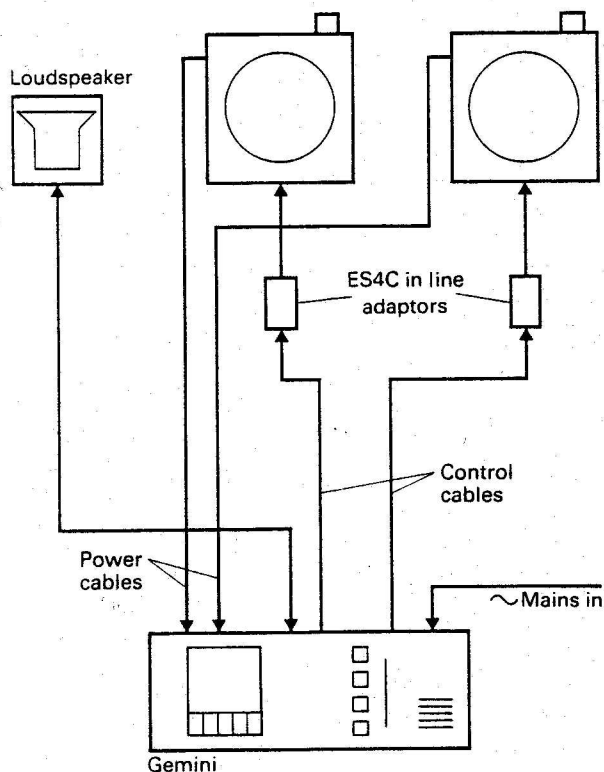
This section assumes that you are using GEMINI to replay an existing show. You will therefore have a show in the form of a tape cassette and two slide trays; and will have set up the equipment as described in "Setting up GEMINI".



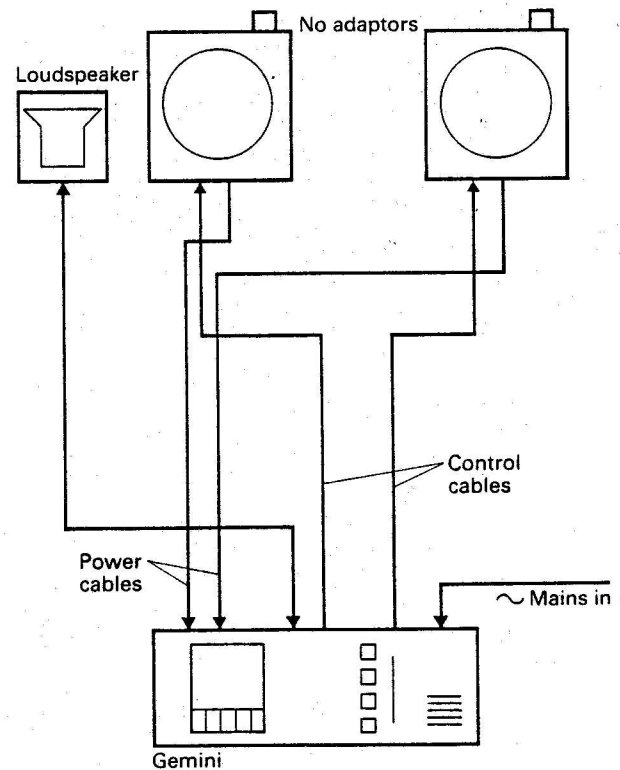
Kodak Carousel SAV 2000 2020 2030 or 2050 Projectors



Eastman Kodak Ektagraphic III Projectors



Eastman Kodak Ektagraphic II Projectors
(also Ektagraphic III but no automatic reset)



ES 4050 Projectors with built in Triac.

Fig.6 GEMINI The basic set up



Fig.7 GEMINI (ES461) With 2 ES4050 projectors

Place the slide trays on their respective projectors. The trays should be labelled A and B.

Set the mode switch on the front panel to "FM Record Slider". (Figure 8.)

Set the slider on the top panel to its midpoint position. (Figure 4.)

If the red indicator "Program Pause" on the top panel is lit, press the grey button next to it. This will cause both projector lamps to come on.

Advance both projectors to slide 1 (using the manual controls on the projectors) and line up both projectors on the screen so that both images are in focus and exactly over-

lap. If you want to see only one image at a time, move the lever on the top panel gently to either end of its travel. (Some producers thoughtfully include a "line up" slide in position 80 of Carousel slide trays. If this has been done, then reverse the projectors to this position. Once set up, advance to position 0.)

Once you are satisfied that you are "lined up", press the "Reset" button. (If you are using ES4C adaptors on Ektagraphic projectors, or non Carousel type projectors, manually reset both projectors to position 0.)

Your cassette should be marked with the required settings, stating which mode of programming has been used.

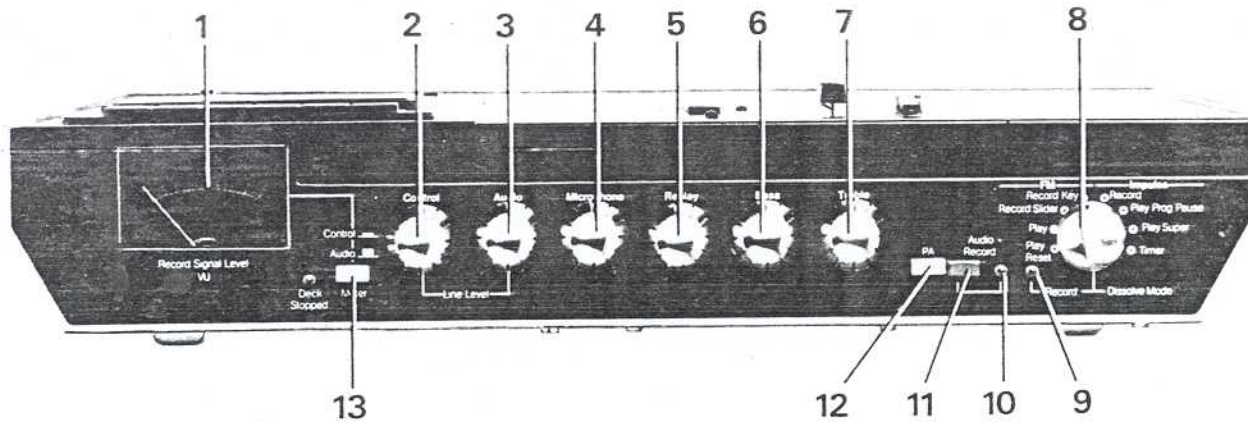


Fig.8 GEMINI Front panel controls

1 RECORD LEVEL METER
Peak at about +3 on Audio. If dubbing Control signal set at -3.

2 CONTROL SIGNAL LEVEL CONTROL
Control only used when making Copy Tapes otherwise keep at fully anti-clockwise position.

3 AUDIO LINE SIGNAL LEVEL CONTROL
Used when making copy tapes and when mixing other sources with microphone.

4 MICROPHONE CONTROL.
Used when making show direct on GEMINI and for PA.

5 REPLAY LEVEL CONTROL. The volume control for show playback.

6 BASS TONE CONTROL.

7 TREBLE TONE CONTROL.

8 MODE SWITCH. GEMINI works in many ways. This switch determines which. Most programs use FM Mode.

9 CONTROL SIGNAL RECORD L.E.D.
This lights when Mode switch is in one of its record positions AND record has been selected on the Tape Deck.

10 AUDIO SIGNAL RECORD L.E.D.
This lights when Audio Record switch is in AND record has been selected on the Tape Deck.

11 AUDIO RECORD SWITCH. This selects the Audio Channel in to Record.

12 PA SWITCH
This selects P.A. facility.

13 METER SWITCH
Normally the Meter reads Audio Signal Record level. This switch selects Control Signal level when making Copy Tapes.

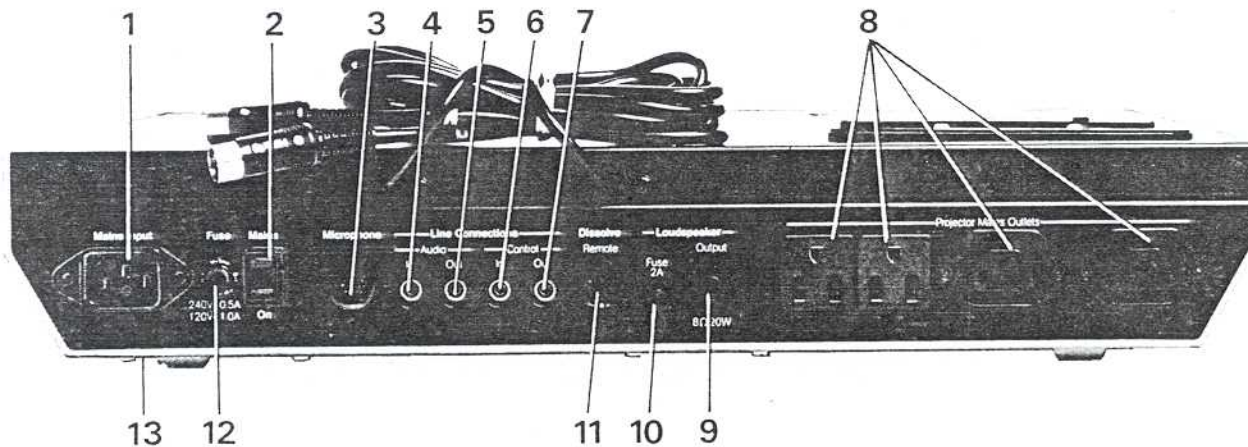


Fig.9 GEMINI Rear panel controls

1 MAINS POWER
Input Connector.

2 ON/OFF switch.

3 MICROPHONE SOCKET

4 AUDIO LINE SIGNAL IN
For mixing with Microphone Signal or for Copying from another Tape Recorder.

5 AUDIO LINE SIGNAL OUT
For copying to another recorder or to external amplifier.

6 CONTROL LINE SIGNAL IN
For using Dissolve section with an external Tape Recorder.

7 CONTROL LINE SIGNAL OUT
For feeding Control Signal to an external Tape Recorder.

8 COURTESY SOCKETS
For Slide Projectors
2 USA TYPE 2 CEE TYPE

9 LOUDSPEAKER JACK SOCKET
Insertion of plug automatically mutes monitor speaker.

10 LOUDSPEAKER FUSE
Protects against accidental short circuit in extension Loudspeaker Cable.

11 REMOTE DISSOLVE SOCKET
For Push button Remote Control of Dissolve Section.

12 MAINS FUSE
(For Electronics only).

13 THE VOLTAGE SELECTOR is on the BASE of the Unit.

If your cassette states "FM", or if no instructions are marked, set the mode switch to "FM PLAY".

If your show has pulsed signals, set the mode switch either to "IMPULSE PLAY PROG PAUSE" or "IMPULSE PLAY SUPER". In the case of a show in Impulse mode, you must also set the slider on the top panel to the required dissolve speed, using the scale on the right hand side of the slider. This information should also be marked on your cassette.

Press the EJECT button on the tape cassette mechanism. Insert the tape cassette with label upwards and opening towards you. Close cassette lid.

Check that all the push buttons on the front of GEMINI (Meter, PA, Audio Record) are in the out position. Check that the controls not needed for running a show (Control, Audio, Microphone) are in the fully anticlockwise position.

Depress the tape start button on the tape deck. If you have followed the above instructions exactly the "Program Pause" and "Deck Stopped" indicators will both be on. Now press the grey "Program Pause" button again and the tape deck will start and run the show.

Set "Replay" to the volume required, and "Treble" and "Bass" to the preferred setting. It is recommended that these are set to the midpoint position unless the program material or environment dictate a special setting.

If your program includes some automatic tape stops in it, when these occur the tape deck will stop and the system will revert to the "Program Pause" mode. To restart the deck, press the "Program Pause" button.

10 Resetting the Show

At the end of a show, rewind the tape and reset the projectors. This can quickly be done by selecting "Record Slider" and pressing the "Reset" button. (Do not forget to reselect "Play" when you want to start the show again.) If you are using ES4C adaptors or non Carousel type projectors, it will be necessary to manually reset the slide trays to zero.

If your show is one show only without pauses and without the need to show additional "lecture" slides, then running the show with the mode switch set to "Play Reset" will give an automatic reset at the end of each show; assuming FM synchronisation. If impulse mode is being used, then automatic reset will only occur if the show producer has recorded the necessary signal.

11 Manual Control During a Show

If your show includes deliberate pauses requiring lecture slides to be shown, or if you wish to show such slides after the main show, then the unit must be in the "Program Pause" condition.

In this case manual control of GEMINI can be obtained

- Either from the push buttons on the top panel. "Cut", "Dissolve" and "Reverse" only are operative
- Or by a remote wired control connected to the "Dissolve Remote" socket on the back panel (see technical specification for connections)
- Or by using MERCURY infra red hand control. (See relevant section of these instructions.)

RECORDING A PROGRAM ON GEMINI

If you have studied the earlier sections on the ECLIPSE, you will now be able to use the dissolve unit functions of GEMINI.

It is normal to record the audio track first, and then add the projector control information on a separate track of the tape, whilst listening to the audio signal. So we shall first look at how to record an audio track on the GEMINI cassette recorder.

Before making a recording, and indeed after several hours of use in the playback mode, the tape heads should be cleaned.

12 Recording Audio on GEMINI

The audio part of the program can consist of commentary, pre-recorded music and sound effects. When recording on the GEMINI cassette recorder, either a microphone can be used, or an external audio source such as a tape recorder, record player amplifier etc.

A microphone should be plugged into the MIC socket on the rear panel. An external audio source should be plugged into the "Audio line in" socket, also on the rear panel. (See technical specification for details of pin connections.) The location of these connections is shown in Figure 9.

The procedure for recording the audio track is no different from using any other tape recorder.

Check that the system is NOT in "Program Pause" condition.

Connect your audio source(s) to the back panel connectors as described above.

Now we must load a cassette tape into the deck. This is done by first pressing the STOP/EJECT key, which raises the cassette carrier. The cassette is slid into the carrier with the exposed tape facing towards the front. The carrier is now pressed down so that it locks back into its horizontal position. Note that the cassette tape has two safety tabs on it, one for side A, and one for side B. These tabs must be intact, otherwise it will be impossible to press the "Record" key down. The safety tabs can be removed after the recording is completed, so that the program cannot be accidentally erased.

— Depress the red "Audio Record" button on the front panel.

— Depress the "Pause" button on the tape deck.

— Simultaneously depress the "Record" and "Play" buttons on the tape deck.

Set the incoming record signal level on the meter. The meter switch should be out in the "audio" setting. Speaking with the microphone or playing some of the external signal source should cause the meter to move. Adjust the "Microphone" and/or the "Audio Line" controls on the front panel so that the average signal is well up in the green, with peaks only at up to +3 in the red.

If you are not using either the microphone or line input see that the unused control is turned fully anticlockwise.

Release the "Pause" button on the tape deck and record your audio program.

When you have completed the recording rewind the tape deck; RELEASE THE RED AUDIO RECORD BUTTON; and then press the "Play" button to hear your recording.

13 Recording the Projector Control Signal on GEMINI

Having made the audio recording it is now necessary to record the synchronising information.

The instructions in this section relate to the use of the continuous FM signal as a means of synchronisation. This is the most versatile system. However, GEMINI can also be operated in an "Impulse" mode where 1 kHz impulses or "bleeps" are used. This alternative method may be more appropriate for some commercial and educational uses. However, it is suggested that you try the procedures described in this section first and then, once familiar with them, you consult the section "The Impulse Mode" if appropriate.

Before making a real program it is as well to familiarise yourself with the procedure. With the tape rewound to the beginning proceed as follows:

- Check that the red "Audio Record" button on the front panel is released.
- Depress the "Pause" button on the tape deck.
- Simultaneously depress the "Record" and "Play" buttons on the tape deck.
- Set the mode switch on GEMINI to either "FM RECORD KEY" or "FM RECORD" as desired.
- If the "Program Pause" light is on, cancel it by pressing the "Program Pause" button.

The red indicator "Output" on the front panel of GEMINI is now glowing.

The presence of a control signal will be indicated by a reading of approximately -3db on the record signal level meter (with the switch depressed to the "control" setting).

Now release the "Pause" control and, while the tape is running, operate the push buttons or the slider on the GEMINI to create a sequence of dissolves. After a few changes press the "Reset" button. The tape deck will stop automatically.

The projectors will now be automatically returning to zero. (Unless ES4C adaptors or non Carousel projectors are being used, in which case manually reset the projectors.)

Once the projectors are at zero:

- Cancel "Program Pause".
- Rewind the cassette deck.
- Set the mode switch to "FM Play Reset".
- Start cassette deck.

The tape will now play, and the projectors will follow exactly the sequence that you have just recorded. Notice particularly:

- The green indicator "Replay" on the top panel glows while the tape is running and while there is a control signal on the tape.
- Even the resetting of the projectors has been "recorded".

To familiarise yourself with the various possibilities try repeating the above procedure two or three times. From the "getting acquainted" section in the ECLIPSE instructions, you will already know some of the effects that can be achieved; so establish that you have no difficulty in recording them. In particular:

- Try both "Record Key" and "Record Slider" modes.
- Note that it is not necessary to record a "reset". Usually this is only done at the end of a program.
- If you playback a program in the "FM Play" mode, then any "reset" signal is interpreted as a "Program Pause". This is therefore the "safer" playback mode if you are also doing lecture work, since it avoids the possibility of an "unwanted" reset.

There are four points that should be noted:

- When you make a program by listening to the audio and operating the dissolve unit, you will hear a variable frequency tone on the loudspeaker. This "crosstalk" is unavoidable when recording in this way. However, the crosstalk does NOT come out on the finished recording.
- It is quite permissible to simultaneously record the audio and the dissolve signals. It is rather difficult to do but technically no problem since you need only select "Audio Record" at the same time as "FM" or "Impulse" Record.
- When you have completed a program, both in respect of audio and control; do not forget to remove the safety tabs from the back of the cassette to prevent subsequent accidental erasure.
- A completed tape cassette should be labelled both with the show title and with the dissolve mode setting it is intended to be played back on.

COPYING FROM A MASTER TAPE

Professional audio visual programs are not usually made directly onto tape cassette. Thus, while the procedures described in "Making a Show" above are suitable for short life in-house shows, or for developing a show, a serious audio visual producer would usually make a master tape on a reel to reel tape recorder, and then make show copies onto cassettes. GEMINI can help this process by providing the dissolve control signal for feeding to a separate master tape recorder.

14 Making the Show Copies

When the mode switch on the front panel is in one of its record modes, the corresponding control signal is available from the "Control Line Output" socket on the back panel. This can be fed to another tape recorder and thus the dissolve unit signals can be laid down on a separate master tape.

Similarly the signals so laid down can be proved by feeding them into the "Control Line Input" on the back panel, and by setting the mode switch to the appropriate replay

mode. The presence of the control signal will still be indicated by the green l.e.d. indicator on the top panel.

When it is required to copy from a separate master tape recorder onto a cassette in GEMINI proceed as follows:

— Connect the audio signal from the master tape recorder to "Audio Line In" on the back of GEMINI.

— Connect the control signal from the master tape recorder to "Control Line In" on the back of GEMINI.

— Set the mode switch on the front panel to one of the record modes.

— Depress the red "audio record" button on the front panel.

— Depress the "Pause" button on the tape deck.

— If the "Program Pause" l.e.d. is on, cancel "Program Pause".

— Depress the "Record" and "Play" button on the tape deck.

Play a section of the master tape. Set the "Line Level" controls on the front panel so that the recorded signals as seen on the meter are as follows:

(Meter switch is in OUT or AUDIO position) signal should be in the high green with occasional peaks to +3 in the red.

(Meter switch in IN or CONTROL position) signal should be at a steady -3 in the green (for FM signals). If using impulse signals these should also register -3 but only for the short time the signal is present.

Rewind the master tape. Start it again, simultaneously releasing the tape "Pause" button on the tape deck.

When the recording is complete, rewind the tape cassette; set the dissolve mode switch to the appropriate play setting and test the cassette by running the program through GEMINI.

Professional audio visual producers are further advised:

Do NOT make further show copies by using a high speed cassette duplicator. Good audio visual shows deserve individually made show copies.

ALWAYS ensure that an important show is sent out with two copies of the tape. Accidents can happen!

THE PA FACILITY

The PA or "Public Address" facility allows GEMINI to be used for speech reinforcement. This can be especially useful if a lecture has to be given before or after running the audio visual show. To use this facility connect a suitable microphone to the MICROPHONE socket on the back panel. (See technical specification for connection details.) Then depress the "PA" switch on the front panel.

The microphone signal will then come over the loudspeaker, its level being set by the "Microphone" control on the front panel. In using this facility:

Remember to turn down the microphone or disable the PA facility during an actual show — unless you want to comment on a show in progress.

Keep the microphone well away from the loudspeaker to avoid acoustic feedback or "howlround".

It is also possible to use the amplifier in GEMINI for amplifying other sound sources. Any signal fed into the "Audio Line In" connector on the back panel will be played through the amplifier with its relative volume being adjusted by the "Audio Line Level" control on the front panel.

CONTROL SIGNAL COMPATIBILITY

The FM signal used in ECLIPSE and GEMINI is the same as that used in the following Electrosonic products:

ES3069 SHOWSLIDE

ES3609 PRESENTATION UNIT

ES3669 SHOWTAPE

ES69 DISSOLVE UNIT

The IMPULSE signal used in ECLIPSE and GEMINI is compatible with that used in some other Electrosonic products:

ES3006 SHOWPULSE (dissolve and cut only)

ES3601 PRESENTATION UNIT.

(The slider must be set to the time corresponding to the Dissolve 2 setting on ES3601. GEMINI will play those programs using TAPE STOP or SUPERIMPOSITION, and the mode switch should be set to "IMPULSE PROGRAM PAUSE" or "IMPULSE SUPER" accordingly. ES3601 programs using 150 Hz tone for Snap or Cut changes CANNOT BE PLAYED ON GEMINI.)

MERCURY (ES463) INFRA RED REMOTE CONTROL

Many users of ECLIPSE will want to use it from manual push button control to accompany lectures etc. This can be done in two ways:

— Via the "Remote" Control socket on the front panel. This is intended for permanent installations such as Lecture Theatres. The connections are given in the technical specification.

— By the MERCURY ES463 cordless remote control. (See Figure 5.)

Push button remote control is only possible in the "Program Pause" condition, so the "Program Pause" indicator must be on and ECLIPSE must be in any one of its PLAY modes.

The user should aim MERCURY in the general direction of ECLIPSE when a long range is involved. The buttons "Cut", "Dissolve" and "Reverse" on Mercury exactly duplicate those on ECLIPSE. There is also a "Program Start" button. Operation of this button

— Cancels "Program Pause".

— Produces a tape deck start signal from the remote socket on ECLIPSE.

NOTICE THAT "PROGRAM START" MUST BE PRESSED TWICE IN SUCCESSION TO BE EFFECTIVE.

ECLIPSE and GEMINI are either fitted with a built in infra red sensor behind an orange bezel, or fitted with a small jack socket. Both are marked with the legend "infra red link". In the latter case the sensor is a plug in item and will have been supplied with MERCURY. The lens should be pointed in the direction of the person using MERCURY.

NOTE: It is NOT possible to convert from one type of sensor to another.

MERCURY is fitted with a long life battery from which power is only drawn when transmitting. Battery replacement is by removing the cover.

SPECIAL NOTE ON PROGRAM PAUSE

The rules governing PROGRAM PAUSE are as follows:

— When power is first applied to ECLIPSE, it will always come on in the "Program Pause" condition.

— In the "Program Pause" condition, ONLY push button control of ECLIPSE is possible, and ONLY "Cut", "Dissolve" and "Reverse" may be selected. There are no signal outputs and ECLIPSE will not respond to any signal inputs from tape.

— When in any of the RECORD modes activation of RESET both causes a reset and a reversion to "Program Pause".

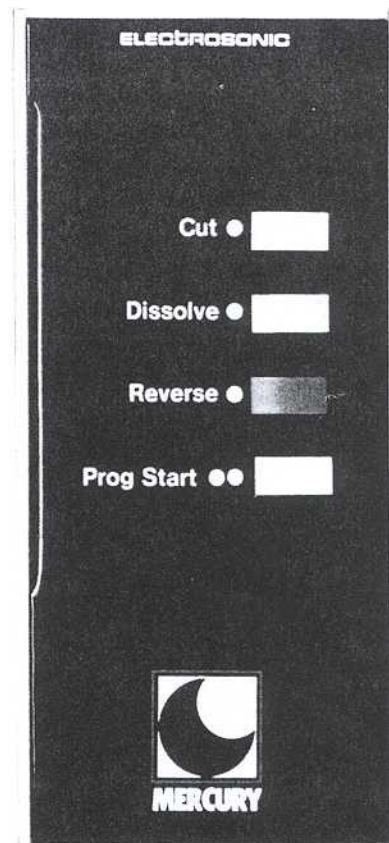
— When in the REPLAY mode, the receipt of a RESET signal will cause the projectors to RESET; and during the reset process ECLIPSE is effectively in "Program Pause". However, as soon as reset is achieved, ECLIPSE will cancel "Program Pause" itself and be ready to receive a new input signal immediately. (This feature can be used to automatically restart a tape deck via the remote control socket.)

ALTERNATIVE PROJECTORS

ECLIPSE is able to work with projectors other than the Kodak Carousel SAV and Simda 3200 series; but the suitability of particular projectors must be agreed by Electrosonic or their Dealer. The following notes may be helpful:

In principle, projectors that use 24V lamps and already have a triac fitted may be used with ECLIPSE without the need for adaptor plugs. However, the RESET feature will not be operative; and a special cable set will usually be needed. Special models of the Leitz, Zeiss Ikon, Leisegang and Kindermann projectors may be suitable.

Fig.5 MERCURY
Infra red control. Program start must be pressed twice to be effective.



Fuse: 500 mA at 220V setting
 1A at 115 setting
 Fuse should be fast acting 20mm × 5mm

Power consumption: 50VA maximum at 240 Volts. Excluding projector power.

Projector mains outlets: 2 × 3 pole standard USA mains sockets.
 2 × 3 pole IEC 6A female connector.
 Note these all present the full mains voltage as at the mains input.
 These sockets are not fused.

AUDIO SECTION

Audio amplifier output: 20 watts at 8 ohms (Maximum power depends on mains voltage)

Loudspeaker connection: 0.25in jack

Loudspeaker fuse: 2A fuse fast acting 20mm × 5mm

Total harmonic distortion: 0.15% at 10 watts 1 kHz
 1% at 20 watts 1 kHz

Tape: Compact cassette C60 and C90

Track format: 2 track 2 channel (audio visual standard track 1+2 = audio; 4 = control)

Tape speed: 17¹/₈in, 4.75cm per second

Wow and flutter: ± 0.18% RMS

Fast wind time: Approx. 100 seconds for C60

Line connections: Audio in: Audio out: Control in: Control out: All phono. All 0dbM RMS nominal

Line input impedance: 25 K ohm nominal

Line output impedance: 1 K ohm nominal

Microphone input: 180° 5 pin DIN connector
 Pin 1 Signal
 Pin 2 Ground
 Input impedance 50K ohm
 Sensitivity 1 mV RMS for 0 Vu record level

Hum and noise: (CCIR weighted. Reference 200 nWb/m, 315 Hz)
 Audio -60 dB
 Control -55 dB

Tone control range: Bass ± 10dB at 40 Hz
 Treble ± 10dB at 8 kHz

Frequency response: Audio 11 kHz ± 3dB record/replay
 Control 80 Hz - 10 kHz ± 3dB replay
 100 Hz - 5 kHz ± 3dB record/replay

Crosstalk control — audio: Replay -58dB
 Record/replay -56dB
 (Reference 200 uWb/m, 315 Hz. Control tone 1 kHz, -2VU)

Projector control cable connections: 8 pin DIN
 Pin 1 Projector homing contact
 Pin 2 Step common
 Pin 3 Not used
 Pin 4 Forward step
 Pin 5 Triac gate pulse
 Pin 6 Triac cathode ground
 Pin 7 Reverse step
 Pin 8 Not used

Remote control socket connections: 6 pin DIN
 Pin 1 Cut
 Pin 2 Dissolve
 Pin 3 Common
 Pin 4 Reverse
 Pin 5 Program start/stop (Duplicates function of "program pause" button)
 Pin 6 Tape deck start (Note that this is wired in parallel with the internal deck control. Connecting this to Pin 3 overrides program pause.)