CHAPTER 12:
THE POLLUX SPECIAL EFFECTS PROJECTOR
INTERFACE

INTRODUCTION

The *Pollux Special Effect Projector Interface* provides the necessary electronics to allow the *Gemini General Purpose Controller* to control just about any 120 VAC special effect projector that can be found in the planetarium environment. The *Pollux* transforms the low voltage control signals from the *Gemini* into the higher power signals needed to operate special effect projectors. In addition, the *Pollux* also senses several projector attributes and transforms them into low voltage signals that are returned to the *Gemini* for reporting to the *Hercules Central Processor*.

The *Pollux* is equipped with four channels to control the projector cooling fan, provide lamp dimming, and operate two additional motors or functions. MOTOR 1 operates in three modes, called ON, OFF, and RESET. MOTOR 2 operates in only two modes, ON and OFF. When properly attached to the special effects projector, the *Pollux* can sense when MOTOR 1 is HOME (or RESET), and when the lamp has failed.

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INTERFACE CONNECTION

The special effect projector is attached to the standard *Pollux* by means of a 10-pin Cinch-Jones connector. The pin diagram for that connection follows:

Special Effect Interface Cable Pin Assignment:

Pin	Signal	Description	Pin	Signal	Description
1	Neutral	Neutral 120 VAC	6	Ground	Frame Ground
2	Neutral	Neutral 120 VAC	7	Motion 2	Switchable Motor
3	Lamp	Dimmable Lamp	8	Home Sensor	Home Switch Common
4	Fan	Automatic Fan	9	+5V	Home Switch Normally Closed
5	Motion 1	Switchable Motor	10	SG	Home Switch Normally Open

PROJECTOR HOMING

In many cases, special effect projectors will include a position sensitive motion. This may be a mirror slew, a rotator, or any device that is used to move, manipulate, or alter a projected image. This motion is a candidate for home position sensing if it is ever used in a definable manner.

For example, in a particular program a mirror slew on the XY projector should move the image from point A to point B during the show.

Traditionally, position sensitive motions have been set manually before the show. The *Pollux*, in conjunction with the **UTCS**, can be used to perform this function automatically. Using the MOTOR 1 output to control the motion and a micro-switch or optical sensor to indicate the 'HOME' position of the motion. The 'HOME' position sensor is attached to the appropriate connections on the *Pollux* Cinch-Jones plug.

When connected in this manner, MOTOR 1 will ensure the motion travels to the 'HOME' position and stops when commanded. Motion homing will take place when any of the following occurs:

1. The M1R (MOTOR 1 RESET) command is issued to the device.
2. The PH (PROJECTOR HOME) command is issued to the device.
3. The HOMESYS command is issued to the UTCS.
4. The *Gemini* unit is reset.
5. The *Gemini* unit is powered up.

The HOME status can be observed by viewing the HOME light on the front of the *Pollux.* This indicator lights only when the *Pollux* senses that the motion is HOME. If the HOME light is on when the motion is not home, and vice-versa, the polarity of the HOME signal may be changed by moving a jumper on the W3 header on the *Pollux* circuit board.

Note: The *Pollux* must be attached to the *Gemini*, and the *Gemini* must be on for the indicator to be active.

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INSTALLATION

Each *Pollux Special Effect Interface* can control one full featured special effect projector. Separate control circuits are available for the fan, the lamp, and two auxiliary circuits such as motors. One of the auxiliary circuits has an associated home sense circuit for the automatic homing of device motions. Use the following procedure to connect the *Pollux* to the special effect projector and the *Gemini General Purpose Controller*.

1. Plug the ten pin **Jones** connector into the receptacle on the rear of the *Pollux*.

    Note: Because there is no standardized method of connecting special effect projectors to interfaces, most projectors will have to be modified to be used with the *Pollux* units.

2. Plug the *Pollux* power cord into a convenient AC receptacle.

    Note: The *Pollux* and the *Gemini* that control it must be on the same electrical power phase to insure that lamp dimming will occur correctly. The easiest way to insure this is to connect the *Pollux* and the *Gemini* to the same power circuit.

3. Connect the female end of the wedge shaped 9 pin (**DB9**) control cable to the male plug on the rear of the *Pollux*. The two screws can be tightened to insure that the cable will not be accidentally pulled out of the *Pollux*.

4. Connect the male end of the wedge shaped 9-pin (**DB9**) control cable to one of the control ports on the rear panel of a *Gemini*. The two screws can be tightened to insure that the cable will not be accidentally pulled out of the *Gemini*.

5. Use the front panel menu to select the '**FX - POLLUX**' option for the control port to which the *Pollux* is connected.

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CONFIGURATION FILE EXAMPLE

The example below uses from a default *Configuration File* which is distributed with new *Hercules* program disks. *Intelligent Controllers* and their devices do not need to added to the *Configuration File* in any particular order, but the default *Configuration File* should be used as a guide to help create some sort of consistency between installations.

```
<ALT>    (N)ew    (O)pen    (S)ave    Save(A)s    (D)elete    (P)rint    (Q)uit Editor
File: HERCMS.CFG
Dvc#  DevCode   Description        Type   Unit# Slot# Branch Bank Scrn Init Max

161   AURORA    AURORA SPFX PROJ    FX     7     1     0      -    -    0    100
162   TAST      TUMBLING ASTEROID   FX     7     2     0      -    -    0    100
163   SOLECLP   SOLAR ECLIPSE SPFX  FX     7     3     0      -    -    0    100
164   SNOW      SNOW SPFX PROJ      FX     7     4     0      -    -    0    100
165                                        0     0     0      -    -    0    100
166                                        0     0     0      -    -    0    100
167                                        0     0     0      -    -    0    100
168                                        0     0     0      -    -    0    100
169                                        0     0     0      -    -    0    100
170                                        0     0     0      -    -    0    100
171                                        0     0     0      -    -    0    100
172                                        0     0     0      -    -    0    100
173                                        0     0     0      -    -    0    100
174                                        0     0     0      -    -    0    100
175                                        0     0     0      -    -    0    100
176                                        0     0     0      -    -    0    100


EDIT DEVICE CODE - Enter (1-8) alphanumeric characters (spaces are illegal).
 The first character must be alphabetic.
```

The example shows a *Gemini* unit with four special effect projectors. The Gemini is assigned **Unit 7**.

The **Unit Number** is user defined and can be any previously unassigned value from 1 to 64. Some *Intelligent Controllers*, with internally set **Unit Numbers**, are limited to a range from 1 to 32.

The **Device Code** and **Device Name** are also user defined. The **Device Code** is limited to eight alphanumeric characters, but spaces are not allowed. The **Device Name** can be up to eighteen alphanumeric characters, and spaces are allowed. Both entries should be as descriptive as possible to make them easy to remember.

The **Device Type** will determine how the *Hercules Central Processor* to correctly display and update the device status. The correct **Device Type** for a *Pollux* controlled special effect projector is '**FX**'.

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SPECIAL EFFECT COMMANDS (TYPE FX)

Remember that all commands must be issued from the **Hercules** and directed at a particular device. The following table lists all the commands available to control a special effect projector using a **Pollux Special Effect Interface**:

Hercules Command	Command Name	Command Description
#A	# Sec Alternate (0.1 ≤ # ≤ 999.9)	Changes state of lamp (on to off or off to on) in a ramp of # seconds duration.
#D	# Sec Dissolve (0.1 ≤ # ≤ 999.9)	Changes state of lamp (on to off or off to on) in a ramp of # seconds duration.
#N	# Sec Dissolve On (0.1 ≤ # ≤ 999.9)	Lamp dims up in a ramp of # seconds duration to a lamp level of % (**Limit**). Can be used to ramp from one % (**Limit**) to new % (**Limit**).
#F	# Sec Dissolve Off (0.1 ≤ # ≤ 999.9)	Lamp dims down in ramp of # seconds duration.
#FNF	# Sec Dissolve Off (No Forward) (0.1 ≤ # ≤ 999.9)	Lamp dims down in ramp of # seconds duration.
FA	Fast Alternate	Changes state of lamp (on to off or off to on) instantly.
HC	Hard Cut	Changes state of lamp (on to off or off to on) instantly.
LN	Lamp On	Turns lamp on to a level of % (**Limit**).
LF	Lamp Off	Turns lamp off.
FZ	Freeze	When issued during a lamp ramp, the ramp will freeze at that level. When issued again, the lamp ramp will resume.
PLMP	Pulse Lamp	Triggers ½ second lamp pulse.
F#,#	Flash Lamp **#1**, **#2** (0 ≤ # ≤ 99)	Flashes lamp at regular intervals. **#1** represents 'on' time in system heartbeats; **#2** represents 'off' time in system heartbeats. **F0,0** disables flashing. This command is a layered command. The lamp must be ramped on with another command to see the effect. After the lamp is faded down, a **F0,0** cue must be entered to disable the flash.
M1N	Motion 1 On	Activates special effect motion #1.
M1F	Motion 1 Off	Deactivates special effect motion #1.
MiR	Motion 1 Reset	Instructs special effect motion #1 to seek **HOME** position.
PM1	Pulse Motion 1	Triggers ½ second pulse on motion #1.
M2N	Motion 2 On	Activates special effect motion #2.
M2F	Motion 2 Off	Deactivates special effect motion #2.
PM2	Pulse Motion 2	Triggers ½ second pulse on motion #2.
PH	Projector Home	Turns lamp off. Homes special effect motion #1.
PWRON	Power On	Activates projector power manually.
PWROFF	Power Off	Returns projector power to automatic cycling.