



# Operations Manual



The Basic DVD Commander (here after referred to as the Commander) is a dedicated controller for DVD Players that use the Industrial Pioneer Player Protocol. Known DVD players that is compatible with are the DVD-V7400 (no-longer in production), the V5000 and the V8000. It can also be used with the earlier V7200 or the European version the V7300, but you should advise Exhibit Control Engineering when you purchase a Commander for the V7200, as there are some minor timing differences that should be made in the firmware to optimize its operation with the V7200. Although the Pioneer DVD player has many built in control features, especially using the stack commands, many find the Commander easier to use. This is especially true if you need a tally indicator for the video that is playing. The ability to identify video segments by frame number for attract-loops and shows makes it very useful for applications in kiosks or standalone exhibits. It should also be pointed out that the Commander is an economical compromise from the more full featured (and more expensive) Pioneer controllers. We will point out the key differences that enabled us to streamline the Commander, both in operations and in cost.

The Commander can be ordered in a variety of flavors. The Basic Commander, can handle up to four, button activated shows and have an attract loop. When a show is playing, there is a dedicated tally output that can handle sinking 0.2 amps from a 12vdc power source. Once a show is selected, it cannot be interrupted until it is finished. (So, if you wanted the user to be able to interrupt an ongoing show to start another, you need to consider a different product. But, in most cases, we find it is not desirable to interrupt shows.) If you elect to use the attract loop, obviously you can interrupt it at any time to start any of the four shows

The Basic Commander allows you to designate Shows using either chapter references or frame references. Unfortunately, the Attract Loop can only be referenced by frames, and those references must be in the first 9,999 frames on the disc. All other shows must be referenced using the same method, but that method can either be chapters or frames. Frame numbers must be less than or equal to 999,999. If you use chapters, the disk must have one additional chapter for every show, which immediately follows after the show chapter. Say you wanted a show to be Chapter 2, 3 and 4. You would need a Chapter 5 immediately following them to play to. This ending Chapter should be a chapter of black or the same image as the end of the show and the start of the attract loop. This is because the Pioneer DVD players freeze this frame while it is searching for the next segment to play. Making them black or the same image makes the transition seem seamless. One other note: all videos used must be in the same title.

There are several modes of operation for the Commander; all dip switch selectable. First, you can loop Show One continuously with power up. Next, if you have more than one show (up to four), you can select them with a button press, without an attract loop. To do this, you must designate a frame number for the unit to freeze on. This is where the Pioneer will be parked in still until a button is pushed. If you do not designate a frame for this parking, the player will sit on the last frame of the video just played. You could also put a logo or still image in this area instead of black. The only problem with this is you increase the likelihood of screen burn-in for both plasma and CRT technologies. Finally the last mode is selection of shows (up to four), but with an attract loop which loops continuously between show selections. Once again, in order to make this looping appear seamless, the first 15 frames of the attract loop should be identical to

its last 15 frames. The reason for so many frames is to give you flexibility on where to start and stop the playing of a single loop. DVDs don't really have frame numbers but the player calculates frame numbers based on "I" frames that are usually one for every 11 frames of video. Therefore, you could select a frame to stop on that makes the image seem to jitter. To fix this annoyance, try several different frame numbers around the one with jitter to find the one that doesn't have this problem.

Well that covers what you can do with the Basic Commander, Option A. What if you wanted all button lights to be lit during the attract sequence, you can specify Option B. Here all button lights are illuminated until one is selected and then all but the current show will be extinguished. We recommend that if you use this strategy that you do not use light bulbs but rather LEDs in the button switches or use the Commander configured with mechanical relays to drive the external indicators. Another reason we do not recommend light bulbs is because even low voltage lamps can create enough heat, if left on for extended times, to deform the button or at least discolor it. You could also use a lower voltage power supply, say 9vdc, and 12 volt light bulbs. They will not be as bright, but they also will not get as hot. Do not use a power supply less than 7vdc as this could affect reliable operation of the Commander.

What happens if you want to use some other tally indication that requires a higher voltage, a different type voltage or a higher current rating? The you can specify Option C which provides relay outputs for higher currents, up to 3 amps for each output or Option D which makes provisions for an isolated power source which is rated at 3 amps @ 30VDC or 1 amp @ 120vac.

## Specific Directions for Operation



**Front Face Plate**

DIP Switch Operation: There are five dip switches on the front of the Commander: one to five, left to right.

Switch One is the reset switch. It is normally off (down) for most operations. Switching it up causes the controller to cease operations and do a fresh reboot, as if it were just being powered up.

Switch Two designates whether the show references are frame numbers or chapters. Put the switch down (Off) for frames and up (On) for chapters.

Switch Three is for continuously looping Show 1. Put the switch up (On) to do this or down (Off) for normal operations.

Switch Four is for designating whether to use an attract loop. If you are going to use a normal attract loop put it down (Off). If switched Up (On), the program will search and freeze the designated attract start frame, which should be a black frame or logo. If no frame is designated as an Attract Start Frame, it will freeze on the last frame of the current video.

Switch Five is the Program switch. Leave it down (Off) for normal operations. But when you need to load configuration data or verify loaded data via the Basic DVD Commander Configuration Utility, switch it Up (On) and then cycle the Reset switch or remove and reapply power to boot the unit up in programming mode.

### Serial Communications:

There are two serial communications used by the Commander. They both use the single DB9(F) connector on the rear of the Commander. Normal operations operate at 9600 BAUD, no Parity, 8 Data Bits, 1 Stop Bit and no Control. The Pioneer players default mode is 9600 and should not be changed. But you should check it.

The operational communication cable between the Pioneer and the Commander is a three wire (two conductors and a shield). All Pioneer players have one communications port

that is a DSub-15 pin female connector that needs to connect to the Commander which has a DB9 female connector. The cable that inter-connects the two should be wired as depicted:

Pioneer Player		Basic DVD Commander
DB15(M)		DB9(M)
Pin 1 -----	SHIELD-----	Pin 5
Pin 2 -----		Pin 3
Pin 3 -----		Pin 2

Newer Pioneer players also have a DSub-9 pin male connector. In this case, you only need a standard 9-pin, straight through cable with a male plug on one end and a female plug on the other. This cable is also used for programming the Basic DVD Commander. However, the protocol is different. In this case, the protocol is 4800 BAUD, no Parity, 8 Data Bits, 1 Stop Bit and no Control. The Windows program on the mini-CD will automatically set your serial port up for these communications.

LEDs:

There are seven LEDs (starting at the left: green, red, yellow attract, yellow one, yellow two, yellow three, and yellow four) on the front of the unit and they indicate the status of the Commander.



**Front Face Plate**

LED #1, Green LED, is the Power LED and lets you know that the unit is under power.

LED #2, Red LED, is the Program LED. Normally it is either off when in the normal operations mode (Dip Switch #5 down (Off)). It is on when Dip Switch #5 is up (On) which means it is in the programming mode. When you first power the Commander up, right out of the box, it will be on with the programming switch in the down (Off) position. It will illuminate with the switch off whenever there is no configuration data in the EEPROM, which signals you that you must load configuration references into the unit before use. This LED will also blink for 16 seconds right after the unit has finished accepting data and is ready to go into operational use by switching Dip Switch #5 down (Off). If you do not change the programming switch by the end of 16 seconds, it will illuminate steady and send back what it just loaded to the Configuration Utility to let you

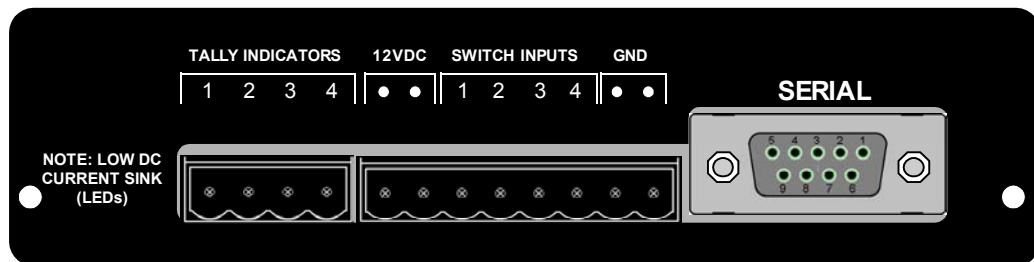
verify the right data was loaded. If you wait until now to switch the Programming Dip Switch down (Off), you will have to cycle the Reset Dip Switch (#1) or cycle power to return the Commander to normal operations.

LED #3, First Yellow LED, is the Attract Loop LED. It is illuminated when the unit is in the Attract Loop. It will blink off and back on every time it starts the Attract Loop over again. It will be out whenever a show is playing or when the Commander is in the Programming Mode. There is no parallel tally indicator for this indicator.

LED #4, Second Yellow LED, is Show One's LED. For all Options except Option B, it will only be on in operational mode when its show is playing. For Option B, it will be on when the unit is in the Attract Loop or When Show 1 is playing and off if one of the other shows is playing. Its tally output on the back of the unit will always be active when this LED is on.

LED #5,6 and 7, Third, Fourth and Fifth Yellow LEDs, are for Show Two's, Three's and Four's LED, respectively. They work the same as LED #4 for each of their shows. For all Options except Option B, it will only be on in operational mode when its show is playing. For Option B, it will be on when the unit is in the Attract Loop or When Show their show is playing and off if one of the other shows is playing. Its tally output on the back of the unit will always be active when this LED is on.

#### Show Select Inputs:

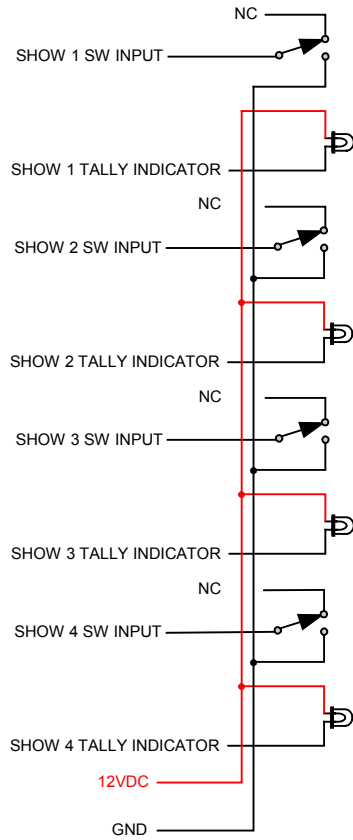


**Rear Face Plate**

Selecting Show 1 through 4 is done by providing “dry” contact closure to one of the inputs on the back of the eight-pin Phoenix connector. See the illustration of the Rear Face Plate. The right most two pins on the 8-pin Phoenix are for the power supply ground and for a ground to go to one side of all four switches.

The tally indicators provide a ground for the illumination device (light bulb or LED). There is one connection on the 8-pin Phoenix connector to take 12vdc to one side of all of the indicators. Then each of the pins labeled tally indicator are connected to their tally indicator and provide a ground when the it should be illuminated. See the typical wiring diagram for Happ Control button switches.

TYPICAL WIRING SCHEME USING  
HAPP CONTROLS LIGHTED  
BUTTONS



Loading Data into the Commander:

The Commander comes with a CDROM (mini) which contains a Windows utility program to load the required data into the Commander. To use this program you will need a PC with Windows 98 or later (up through XP Professional) with a serial port (usually referred to as COM1 or COM A). You will also require a straight through serial cable with 9-pin DSub connectors female on one side and male on the other.

To load the program, double click on the SetUp file on the CDROM and follow the bouncing ball. Once loaded, go to Start, Programs to start the Basic DVD Commander Configuration Utility.



**Main Window**

The first thing to be done is to ensure communications have been established. The program will search for all active COM Ports. If you are using an USB-Serial converter, have it plugged in before starting the program. It should show up in the available port list. If it doesn't show up in

the available ports list, it is not compatible with this program. Click on Com Port and select the Com Port you have the serial cable connected to that is also connected to the Commander.



### Selecting COM Port

The Help Menu item is really a mini-manual for the Basic Commander. It provides references for the dip-switch settings on the Commander (the first menu item). The second menu item condenses the rules for referencing frame numbers or chapters for the shows and the attract loop. The next menu item provides the serial communication settings. The fourth menu item will depict how the communication cables should be configured both for connectors and pin-outs. The fifth item will reflect the serial number of the attached Commander which the PC retrieves from the unit. The About menu is the obligatory advertisement.



### Help Menu

## DVD Configuration

The Pioneer DVD player needs to be set up to work with the DVD Basic Controller. Although there are slight differences between menus between units, the following general procedures should guide you through any of the units. If the menu item isn't available on your model, just skip it. There is also slight difference between the IR remote controls, so consult your Pioneer manual.

To get to the set up menu on the 7200, press the Menu button and hold the button until the Setup Menu appears, which is after the regular menu. On the 7400, just press the Setup button. On the V5000 and V8000, hold the Home Menu button down until the Advanced Menu is displayed. Set the following parameters:

WEEKLY TIMER	OFF
POWER ON START	T01:C01
TITLE PLAY MODE	SINGLE
REPEAT MODE	OFF
BAUD RATE	9600BPS
STILL MODE	FIELD
MARK FRAME SQUELCH	OFF

Of all those settings, the only one that is not intuitive is the Power on Start Mode. So here is a little crib sheet:

1. Move the pointer to "POWER ON START" by pressing the Up or Down arrows.
2. Set to "ON" by pressing the Left or Right arrows. This will display "T00;C00".
3. Press Enter.
4. You'll then have three choices; choose "2" and press enter.
5. Now press "0" and "1" and the Next button.
6. Then press "0" and "1" and the Next button.

That's all that is needed in the Advanced Setup Menu. However, if you are not going to use an Attract Loop, you might want to set the screen color for when the DVD Basic Controller has paused the DVD and is waiting for a show selection. For the 7200, just press Menu briefly; for the 7400 just press Setup briefly; for the V5000 or V8000, press Home Menu briefly. Select "General" which is the end tab. Then select "Background Color". If your shows have black frames preceding and ending them, then change the color to black. If they start and end with a lighter color, then lighten the background color for the best match possible.

## **DVD Media Configuration**

Although there are several ways to control DVD players using the Pioneer Protocol, the DVD Basic Commander only supports two of them: frame number control and chapter control. Please note however, the Attract loop, if used, must always use frame numbers. To use this method, your DVD needs to be pressed with frame numbers. The largest frame number allowed for any show is 999999. You should also specify that “I” frames occur every tenth or eleventh frame. This is almost a de facto standard for the industry, but it helps reduce the search time by holding down the math to determine frames in between the “I” frames. If using Chapter control you must provide a Chapter to play and a Chapter to end. The ending Chapter cannot be the same as the start chapter. In most cases, it should be a very short Chapter of Video Black or the same image as the start image of the attract loop. This will create seamless transitions from the show to the attract loop.

In the event you are using frame numbers to control the video shows, it is also recommended that every show start and stop with 30 frames of black or the same image as the start of the attract loop to help smooth the transition between programs.

If you are going to have color bars and tone pressed on the DVD, we suggest you have it at the end rather than at the beginning. You will configure the DVD player so that it turns on when power is applied. This means the DVD will start playing the first program on the disc until it receives the first command from the DVD Basic Controller. This will result in bars and the annoying tone for a short time each day at start up, if they are the first thing on the disc.

There is a special limitation on the attract loop, if you do choose to have one: its end frame has to be 9999 or less. Obviously, the start frame has to be less than that. So the longest attract loop you can have is 9998 frames or about five and one-half minutes. Although not mandatory, it is suggested that the start frame and the end frame have the same image or black. Once again, this helps make the attract loop seem seamless.