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Play synchronisation system for the Pioneer® BDP-V6000 player

Technical Data

BD-PSYN2-16 unit
Firmware revision 1.00

Features

- **Available for synchronisation of 2 to 16 (in even numbers) Pioneer BDP-V6000 players***
- **Externally triggered (button or switch) one-shot and continuous play versions**
- **Passive Infrared Motion triggered version**
- **Ultra low power consumption from any player USB port**
- **Simple connection to Pioneer BDP-V6000 player external I/O port**
- **Automatically determines number of connected players and adjusts accordingly**
- **Compatible with DVD media with or without automatic disc PLAY.**

Description

The BD-PSYN unit permits the PLAY synchronisation of 2 to 16 Pioneer BDP-V6000 players when using DVD or BluRay media[Φ].

All players are individually controlled and monitored by the BD-PSYN, each player having it's operational status confirmed on power-up.

Once the BD-PSYN has determined that a player is ready, an RS232 SEARCH title 1 command is issued and the media STILLED at frame 1. Once the BD-PSYN has determined that all connected players are active and STILLED, an RS232 PLAY is issued globally to all players. Each player then continues to play the inserted media until the start of title 2 is detected, whereupon an RS232 SEARCH title 1 is re-issued

BD-PSYN6 shown

to again still the program at frame 1 of title 1. Once all players have confirmed that this has happened a global RS232 PLAY is again issued.

Applications

The BD-PSYN is primarily for use in automatic multiple player presentations of DVD video material.

BLURAY ACCESSORIES

Selection Guide

Description	Part Number
2 – 16 channel synchronisation unit	BD-PSYNn (where n = number of ports required)
2 – 16 channel synchronisation unit with dual Button trigger wires (single shot & constant)	BD-PSYNnBT (where n = number of ports required)
2 – 16 channel synchronisation unit with Passive Infrared Motion trigger	BD-PSYNn+P (where n = number of ports required)
Individually boxed Product	Order Option #01 with the above referenced part number. The produc is shipped in a box..

Note: All products are subject to availability; normal despatch is 10 working days following order date. * Custom port numbers are available; please contact your sales representative for more details.
[Φ] CD-A & Videodisk not supported

Power requirements
The BD-PSYN is powered from a single USB port on any one of the connected players. The maximum current draw is 6mA per-channel.

Player I/O interface
The player IO connection is a standard DB9 male as specified within the BDP-V6000 player specification.
Serial communication protocol is 9600 Baud, 1 Start bit, 8 Data bits, 1 Stop bits, No parity for all commands. All I/O is RS232 and TTL compatible.

BD-PSYN interface

Function	DB9 Female
GND	1
TXD	2
RXD	3
All other connection are N/C	

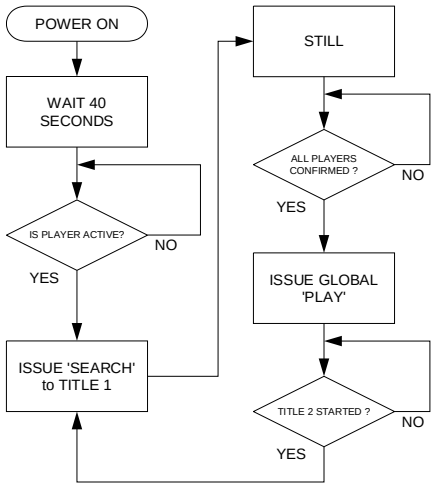
Player RS232 protocol
The BD-PSYN communicates with each player using the Pioneer RS232 protocol **. This protocol takes the form of ASCII command strings of format:

?R<cr>

These strings allow the players to be controlled and status to be determined.

BD-PSYN function
The BD-PSYN waits for 40 seconds after player power-up to allow the player(s) to initialise before taking control. Flowchart 1 shows how the BD-PSYN functions on the Master channel. The master channel will wait for up to 60 seconds for all of the slave players to be switched ON, confirm that a BluRay/DVD disc is inserted and go into STILL.
Should a slave player fail to respond within this period the player is 'locked out' by the master and will not be queried when the global PLAY needs to be issued.
The Master channel must ALWAYS be connected to an active player.

Flowchart .1



DVD Media Authoring Notes
When authoring BluRay/DVD media for use with the BD-PSYN product range the following requirements should be adhered to:

a) Discs with automatic PLAY at power-up can be used, BUT, it is advised that this feature be disabled.
b) The first few frames of Title 1 should contain video black to prevent a frozen picture being displayed during STILL mode.
c) THE DISC MUST BE LAID OUT AS A TWO TITLES WITH THE FIRST CONTAINING THE VIDEO PROGRAM AND THE SECOND A TWO (2) SECOND PERIOD OF VIDEO BLACK.
d) All discs to be used in one DVD-PSYN application should be authored with approximately the same length of content on each. This will prevent long periods of video black being shown if discs are of significantly different length.

Installation

1. Power-up and insert the BluRay/DVD media into each Pioneer BDP-V6000 players and power-down again.
2. Connect the BD-PSYN USB cable to one of the Pioneer BDP-V6000 players, normally the Master player.
3. Connect each BD-PSYN RS232 port, starting with the 'MASTER', to a BDP-V6000 player I/O port. *BD-PSYN10+ products are also fitted with a one-shot external trigger which can be connected to an external Normally Open contact. If not required the ends of the trigger wire MUST be twisted together for correct operation.*
4. Power-up the players (all within 30 seconds), or all together, and wait for the BD-PSYN to PLAY and STILL each player and then all will be set-off together. As soon as the second title starts to play on each player the BD-PSYN will detect this and issue an immediate SEARCH to title 1 and enter STILL mode. Once all players (non locked-out) are again ready a global PLAY is issued once more.

Notes:
- **One player must always be connected to the 'Master port'**. If a port on the BD-PSYN is not required it can be left unconnected. However, it should be noted that on power-up the BD-PSYN will wait for the unconnected port(s) to time-out for a period of one (1) minute before any PLAY instruction is issued.
- All connected players should be powered-up within a period of thirty (30) seconds to ensure that player(s) are not locked out. If a player becomes locked out the BD-PSYN will not wait for this port to complete its title before issuing a global play.
- The media must be already inserted on power-up for the BD-PSYN to take control.
- Always use good quality media to ensure good synchronisation. PLAY synchronisation accuracy is dependant on individual players and may be ± 4 frames.

Electrical Characteristics (T_A = 25°C Typical)

Parameter	Minimum	Maximum	Units	Notes
Supply Voltage (USB)	4.5	5.5	V	
Supply Current per channel	-	6	mA	1
Power-on to global PLAY time	15	60	seconds	
RXData output high level	GND	0.8	V	
RXData output low level	2.4	VCC	V	
TXData input low level	2.4	15	V	
TXData input high level	0.8	-15	V	

Absolute Maximum Ratings

Parameter	Minimum	Maximum	Units
Supply Voltage	-0.5	+6	V
Operating Temperature	0	70	**°C**

Environmental

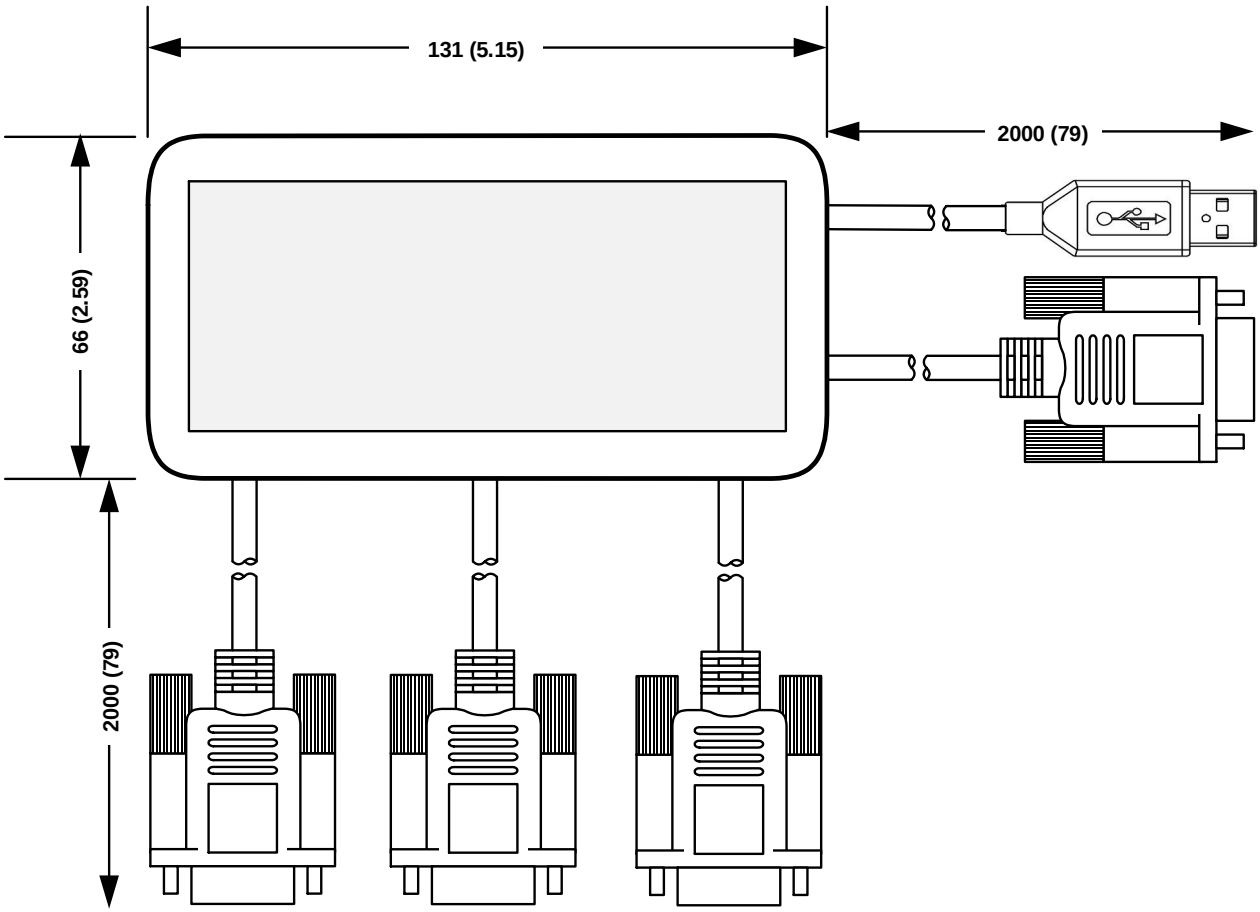
Parameter	Minimum	Maximum	Units
Operating Temperature	0	70	**°C**
Storage Temperature	-10	80	**°C**
Humidity	0	80	**%**
Dimensions	See below		
Weight	240g (BD-PSYN2) 600g (BD-PSYN6)		
Immunity & emissions	EMC compliance to 2004/108/EEC		

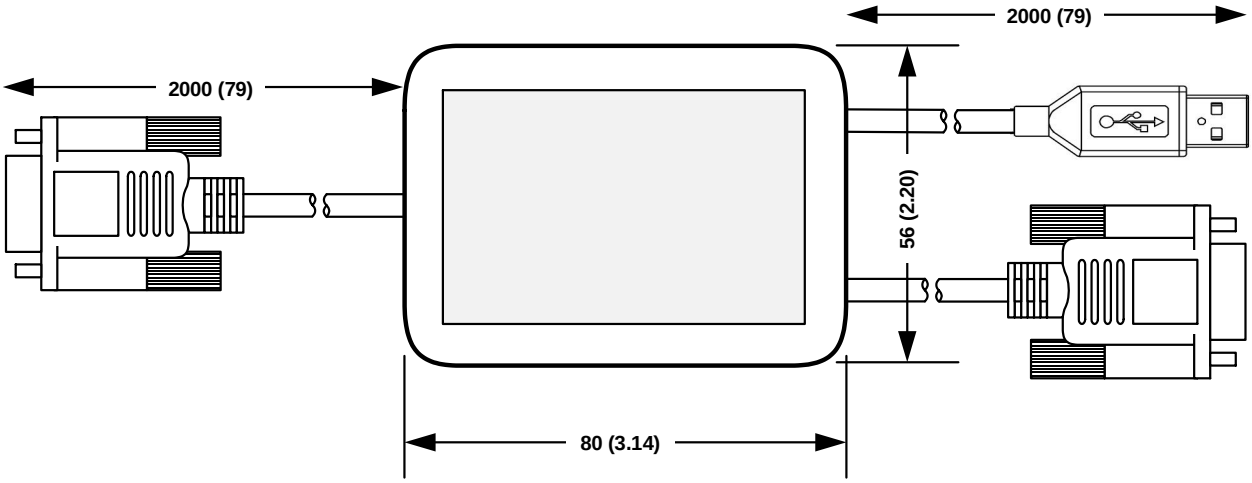
Notes:
1.Value given is for each channel i.e. for a DVD-PSYN3 value would be 18mA total.

** See Pioneer V7X00/V8000 RS232 technical specification for more information.

Mechanical Specifications – Units millimetres (inches)

BD-PSYN4 and BD-PSYN2 shown





WEEE Consumer Notice

This product is subject to Directive 2002/96/EC of the European Parliament and the Council of the European Union on Waste of Electrical and Electronic Equipment (WEEE) and, in jurisdictions adopting that Directive, is marked as being put on the market after August 13, 2005, and should not be disposed of as unsorted municipal/public waste. Please utilise your local WEEE collection facilities in the disposition and otherwise observe all applicable requirements. For further information on the requirements regarding the disposition of this product in other languages please visit http://www.designersystems.co.uk

RoHS Compliance

This product complies with Directive 2002/95/EC of the European Parliament and the Council of the European Union on the Restriction of Hazardous Substances (RoHS) which prohibits the use of various heavy metals (lead, mercury, cadmium, and hexavalent chromium), polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE).

Declaration of Conformity

Apparatus name / model number BD-PSYN
Conformity via Generic Standard EN50081-1
Generic Standard EN50082-1
Conformity criteria For use only within commercial, residential and light industrial applications
We certify that the apparatus identified above conforms to the requirements of Council Directive 2004/108/EEC & 2006/95/EEC
Signed. **Date** 1/10/99

Having made this declaration the CE mark is affixed to this product, its packaging, manual or warranty.

Manufacturer Designer Systems, 11 Castle Street, Truro, Cornwall TR1 3AF, United Kingdom
Description of apparatus DVD player control device