



# **StreamStor FPDP II Daughter Board**

## **User Manual**

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## About This Manual

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This manual is intended to serve the following purposes:

- to provide an overview of the StreamStor FPDP II daughter board.
- to act as a reference for the operator
- to provide guidance on software capabilities and choices

It is suggested that you periodically check the Conduant web site for the most recent software updates, application notes, and technical bulletins.

If you are unable to locate the information you need, please feel free to contact us by e-mail or phone.

## Overview

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The StreamStor FPDP II daughter board is a mezzanine IO board that can be used with some StreamStor controllers such as the Amazon. Adding this daughter board provides a high-speed data interface that conforms to the FPDP specification (ANSI/VITA 17-1998). FPDP is a fairly simple, low overhead parallel data interface with 32 data bits, clocks, and flow control signals. The FPDP II enhancement clocks data on both edges of the input clock to provide double data rate. This board provides up to 400 MB/s of sustained data input or output. The board also provides two independent FPDP interfaces. One interface is on the front panel. Its connector is referred to as the “front” connector. The other interface is internal to the PC. Its connector is referred to as the “top” connector.

In reading the following sections on using this feature, it is important to be familiar with the American National Standard for Front Panel Data Port Specifications (ANSI/VITA 17-1998). This manual is intended to clarify operation as it relates to the standard, not to educate one on the standard itself.

The StreamStor FPDP interface is designed to meet and exceed the basic capabilities of FPDP as defined in the FPDP ANSI standard. The following sections describe:

- any optional FPDP features StreamStor has implemented;
- any features that StreamStor has implemented as a superset to the standard;
- any known deviations from the ANSI standard;
- any clarifications that might otherwise be left open to interpretation; and
- the API functions necessary to configure an external port.

### ***Interface Electronics***

Interface electronics and termination values on StreamStor are those recommended by the ANSI standard, though some signals and terminations can be electronically connected or isolated with crossbar switching devices in order to support electronic reconfiguration.

## **Data Formats**

The FPDP is a multi-drop bus intended to carry either framed or unframed data. StreamStor normally supports only the unframed data mode. The SYNC\* (Sync Pulse) signal is driven to an inactive state while StreamStor is a data transmitter on the FPDP bus.

Contact Conduant for more information on using framed data.

## **PIO Signals**

PIO signals are programmable I/O lines for user-defined functions. These are ancillary signals and are not required for the FPDP data transfer function. Contact Conduant for more information on using PIO signals for custom applications.

## **Connector / Cabling**

The daughter board implements the inverted connector as defined in the FPDP specification for both the front and top connectors. At 50 MHz, cable lengths up to 1 foot (12 inches) are supported, but it is always recommended that the shortest possible cable be used. Longer cable lengths are possible depending on clock rates and other parameters. Please contact Conduant for more information.

## **Programming**

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The FPDP II daughter board is designed for maximum flexibility and can be configured to run as a receiver or transmitter at various clock frequencies.

### **Configuring FPDP with XLRSetDBMode**

The XLRSetDBMode function provided by the StreamStor API is used to set most FPDP parameters and options (see SDK user manual). Table 1 lists the supported modes for this daughter board. Note that the board must be in a compatible mode for the StreamStor operation being requested (i.e. a receive mode for XLRRecord, transmit mode for XLRRead, etc.). The user is responsible for configuring the FPDP bus such that termination is applied only at each end.



**IMPORTANT:** When setting the operating mode for FPDP/FPDP-II connections on a given bus, do not configure more than one connector as a transmitter (FPDP/TM or FPDP/T) on that bus at a time. Otherwise, bus drivers may be permanently damaged.

<b>TABLE 1 – FPDP Modes</b>	
<b>XLRSetDBMode Mode</b>	<b>Description</b>
SS_FPDPMODE_RECVM	Receive data, receive master termination applied.
SS_FPDPMODE_RECV	Receive data.
SS_FPDPMODE_XMIT	Transmit data, no clock output (not defined by FPDP specification).
SS_FPDPMODE_XMITM	Transmit data and clocks, transmit master termination applied.
SS_FPDPMODE_RECVM_CLOCKS	Receive data and transmit clocks, receive master termination applied (not defined by FPDP specification).

Table 2 details the supported FPDP II daughter board options. These options may be combined using a Boolean “or” operation before passing them into the XLRSetDBMode function.

<b>TABLE 2 – FPDP Options</b>	
<b>XLRSetDBMode Option</b>	<b>Description</b>
SS_DBOPT_FPDPSTROBE	Enable TTL clock (PECL is default).
SS_DBOPT_FPDP2DISABLE	Disable FPDP2 dual clock edge capture.
SS_DBOPT_NRASSERT	Receiver will assert “Not Ready” signal until recording starts.

### **Setting up Channels**

The StreamStor system can be configured in various ways to record or playback from the FPDP ports or the PCI bus. These modes of operation are configured using the XLRSetMode function (i.e. SS\_MODE\_SINGLE\_CHANNEL). Each of the possible input or output ports is considered a channel and must be bound into the StreamStor controller before recording or playback will occur from that port. By default the PCI bus is bound as both the input and output port in single channel

mode. Most applications will utilize the single channel mode with a single input and output channel defined. The API functions `XLRBindInputChannel` and `XLRBindOutputChannel` must be called to define an input and output port if other than the PCI bus. Table 3 defines the constants to use to select the appropriate channel for your application.

<b>TABLE 3 – Channel definition</b>	
<b>Channel Number</b>	<b>Channel Description</b>
0	PCI
30	FPDP Top (upper edge of daughter board)
31	FPDP Front (bracket end of PCI card)

### ***Setting Clock Speeds with XLRSetPortClock***

The FPDP daughter board provides programmable clock speeds for those modes that drive a clock onto the FPDP bus (`SS_FPDPMODE_XMITM`, `SS_FPDPMODE_RECVM_CLOCKS`). Table 4 lists the available clock speed settings that can be set using the function `XLRSetPortClock`.

<b>TABLE 4 – Clock settings</b>	
<b>XLRSetPortClock clock</b>	<b>Actual clock speed (MHz)</b>
<code>SS_PORTCLOCK_6MHZ</code>	6
<code>SS_PORTCLOCK_8MHZ</code>	8
<code>SS_PORTCLOCK_10MHZ</code>	10
<code>SS_PORTCLOCK_11MHZ</code>	11.4
<code>SS_PORTCLOCK_13MHZ</code>	13.33
<code>SS_PORTCLOCK_16MHZ</code>	16
<code>SS_PORTCLOCK_20MHZ</code>	20
<code>SS_PORTCLOCK_25MHZ</code>	25.56
<code>SS_PORTCLOCK_26MHZ</code>	26.66
<code>SS_PORTCLOCK_32MHZ</code>	32
<code>SS_PORTCLOCK_40MHZ</code>	40
<code>SS_PORTCLOCK_50MHZ</code>	50

### ***Setting Options with XLRSetOption***

The `XLRSetOption` function is used to set other miscellaneous options. Table 5 lists the options available on the FPDP II daughter board.

<b>TABLE 5 - Options</b>	
<b>XLRSetOption Option</b>	<b>Description</b>
<code>SS_OPT_FSMAPPED</code>	Enables read while recording.
<code>SS_OPT_PLAYARM</code>	Arms two-stage playback.

## Technical Support

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Conduant wants to be sure that your StreamStor system works correctly and stays working correctly. In the event, however, that you are unable to get your system to work properly, or if a working system ceases to function, we will do all that we can to get your system back online.

Solving the problem is largely a matter of data collection and steps that must be taken one at a time. In order for us to better serve you, we ask that you take the time to perform the following steps prior to calling us. This way, you can provide us with the most meaningful information possible that will help us solve the problem.

*Is the problem one that obviously requires replacement parts due to physical damage to the system? If yes, then please gather the information described below and report the problem to tech support, by phone or through the Conduant web site.*

*Have you confirmed that no cabling has been inadvertently disconnected or damaged while working around the equipment?*

*Is the StreamStor card properly seated in the PCI (CPCI/PXI) slot?*

*Do all the systems have good power connections and voltages?*

*Does the confidence test sscfg.exe (on Windows) or ssopen/ sstest (on Linux) run OK?*

*Has the software installation been corrupted? Try re-installing software.*

*Have you checked the Conduant web site for technical bulletins?*

*Have you recently installed a new Linux kernel or compiler or a new Windows Service Pack?*

If the above steps did not resolve the problem, then please initiate a trouble ticket on the support section of the Conduant website at [www.conduant.com](http://www.conduant.com). Please provide as much information about your system and the problem as possible. We will do all that we can to resolve the problem as quickly as possible.

## ***Contacting Technical Support***

E-mail: support@conduant.com

Web: [www.conduant.com](http://www.conduant.com)

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