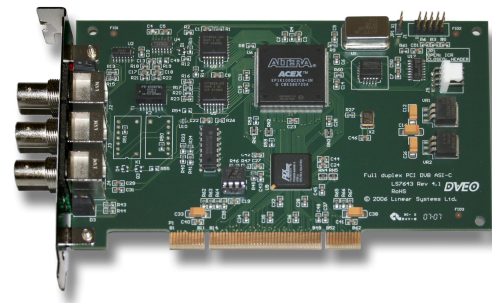


# DVB Master™ FD

**Advanced Full Duplex DVB-ASI PCI Send and Receive Interface Card with Black Burst Sync Input, Accurate Clock, Unlimited PID Filtering, Packet Arrival Timestamping, Jitter Management, and Auto Null Packet Insertion. Optional Failover Relay and High Stability Oscillator Available.**



## Features

- 270 Mb/s DVB ASI transmitter and receiver on one card
- Half size PCI card form factor
- Drivers for Windows® 7 – 32 and 64 bit, Server 2003, Server 2008, Windows® 2000, Windows® XP, and Linux®
- Windows® XP/Server 2003/Server 2008/Linux® API
- DirectShow® filter
- Large buffer FIFOs eliminate latency problems
- Programmable Inter-byte and Inter-packet stuffing as per DVB specification
- Cable Equalization on the receiver input
- LED Status bits for TX, Rx, Sync, and Carrier
- Advanced link-list DMA interface
- PCI 2.2 compliant interface bus
- Advanced Receiver TS processing capabilities
  - Synchronizes incoming packets to byte boundaries
  - Automatic 188 and 204 packet size detection
  - Interrupt on in/out of synch
  - Software selectable option to Strip 16 bytes from 204 byte packets
  - Unlimited PID filtering (any number of PIDs may be selected)
- Advanced Transmit capabilities
  - Enhanced transmit rate “Fine Tuning” control to <2.8ppm granularity
  - Optional High Stability Oscillator with <2.8ppm (special order option)
  - Software selectable option to add 16 - 0x00 bytes to 188 byte packets
  - External transmit clock input
- No on board power regulators

## Applications

- Interface DVB MPEG-2 transport streams to the PCI bus
- PID filtering of transport streams
- IP – DVB interfaces
- Data over DVB
- Interface DVB to ATSC

## Overview

DVB-ASI is a physical interconnect standard created by the international standardization group known as the DVB Project ([www.dvb.org](http://www.dvb.org)). It is designed to carry MPEG-2 transport streams between devices at a maximum rate of 213 Mb/s. The actual signaling rate of DVB-ASI is 270 Mb/s, but there is overhead from the data encoding scheme and the maximum payload ends up being approximately 213 Mb/s.

Transport streams are essentially packetized MPEG streams with tables embedded every 100 ms or so, which tell the ultimate MPEG decoder how to decode the stream.

Furthermore, transport streams may be combined or multiplexed to create multiprogram transport streams with separate PIDs, or program identifiers, that distinguish them as “channels” do in analog television.

We have incorporated as many features as possible into this PCI card. With all these features, our customers can create very powerful workstations that can process transport streams “on the fly” for applications such as broadcasting, cable TV, satellite links, video servers, and distance learning.

## Highlights

- Integration of both transmitter and receiver on the same PCI card gives a one-slot solution for most DVB processing applications
- Driver software is available for Windows® 7 – 32 and 64 bit, Server 2003, Server 2008, Windows® 2000, Windows® XP, and Linux®. The source code is available for the Linux driver.
- Optional high stability oscillator with less than 2.5 ppm drift, meeting ATSC specifications



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# DVB Master™ FD

## Capabilities

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- **Transmitter and Receiver on the Same Card:**  
An input MPEG-2 transport stream can be received, processed and re-transmitted in real time by the host system.
- **Optional Mechanical Bypass:** A relay will bypass the ASI input directly to the output on power failure.
- **Signal Quality:** DVB Master FD provides you with information on signal quality so decisions can be made about switching to a secondary input signal if necessary.
- **PCI compliant interface**
- **Advanced Receiver Capabilities:**
  - Synchronizes incoming packets to byte boundaries
  - Automatic 188 and 204 packet size detection
  - Interrupt on in/out of sync
  - Software selectable option to strip 16 bytes from 204 byte packets
  - Unlimited PID filtering (any number of PIDs may be selected)
- **Advanced Transmit capabilities:**
  - Enhanced transmit rate “Fine Tuning” control to <2.8ppm granularity
  - Optional High Stability Oscillator with <2.8ppm (special order option)
  - Software selectable option to add sixteen – 0x00 bytes to 188 byte packets
  - External transmit clock input (black burst)
- **Receive Packet Synchronization:**  
The DVB Master FD receiver will check the incoming transport stream for packet sync, and synchronize on it. Once synchronized, the packets will be stored on packet boundaries in memory. This makes further processing of the transport stream much easier for the host processor. When the board is synchronized on a valid stream the green “Rx Data” and “Sync” LEDs will be illuminated.
- **Automatic Packet Size Detection:**  
The DVB Master FD will automatically detect packet size and will indicate the current size in a status register. If packet size changes suddenly, it will lose synchronization, then resynchronize on the new packet size and indicate the new packet size in the status register. An interrupt will be generated on loss of sync and re-sync.
- **Indicator LEDs:**  
Indicator LEDs are provided on the bracket to show card operation. Tx – indicates that data is being transmitted, Rx – indicates that data is being received, Sync (S) – indicates that the receiver is able to synchronize on the transport stream packets, and Carrier Detect (CD) – indicates that a signal is present.
- **In/Out of Sync Interrupt:**  
An interrupt will be generated whenever synchronization is lost or recovered. Interrupts are generated when there are changes in the stream and indicate that the status of the stream should be checked.
- **16 byte Strip and Add:**  
The 16 byte Stripping function will remove the extra 16 Reed-Solomon encoded bytes from the 204 byte packets to create 188-byte packets. Similarly, it can be used to add 16 bytes filled with zeros to 188-byte packets to create a 204-byte packet stream.
- **PID Filtering:**  
This function allows you to select any number of PIDs from the total of over 8,000 possible PIDs to be filtered from the stream. The DVB Master FD receiver will block all PIDs that are not selected.
- **Transmitter Fine Tuning (FT):**  
The normal inter-byte (IB) and inter-packet (IP) stuffing options available with the DVB ASI standard cannot be used for fine rate control. In some applications, such as reading files from a disk, it may be desirable to use stuffing to control the transmission rate of the stream in order to match the rate required by the Program Clock Reference (PCR) of a Transport Stream. Because of this, we have developed the Fine Tuning (FT) feature. Fine Tuning is accomplished by first setting the standard IP and IB to select a rate as close to the desired rate as possible. Then the FT parameter can be set to bring the rate within 2.5 ppm of the target. This method of rate control works with small Tx buffers and gives minimum latency.
- **High Stability Oscillator:**  
The DVB Master FD is normally shipped with a crystal-controlled oscillator with a clock accuracy of  $\pm 25$  ppm. This complies with the DVB ASI standard requirements but will not be accurate or stable for ATSC standards. ATSC standards require a clock accuracy of  $\pm 2.8$  ppm with a drift not exceeding 0.028 ppm/s. The High Stability Oscillator ( $\pm 2.5$  ppm clock accuracy) is an extra cost option and must be ordered separately.
- **Clock Source Options:**  
An input BNC connector is provided for an external transmit clock. This clock is one of three optional transmit clock sources. The transmit clock options include the External Clock, Recovered Clock, and Internal Clock. The external input accepts a black burst signal for either NTSC or PAL video.
- **Conformity to DVB Standards:**  
The DVB Master FD meets CENELEC EN50083-9: 1998 – Cable distribution systems for television, sound and interactive services – Part 9: Interfaced for CATV/SMATV headends and similar professional equipment for DVB/MPEG-2 transport streams.
- **EMI Standards:**  
CE Marking in accordance with EN50081-2: 1993 and EN50082-1:1997. FCC Part 15, Subpart B, Class A verification TOP Full Duplex Block Diagram Snoop Function

# DVB Master™ FD

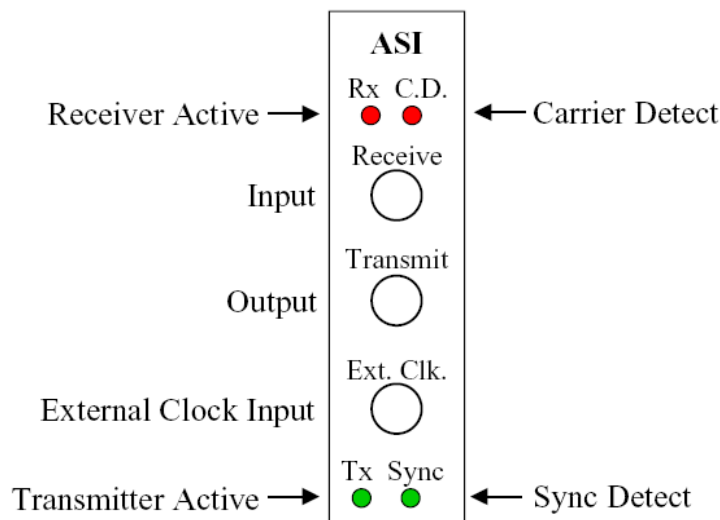
## Configuration Options

- DVB Master FD Standard board
- Optional mechanical relay bypasses primary input to primary output on power failure
- The transmitter function has an option for a high stability oscillator with less than 2.5 ppm drift, meeting ATSC specifications
- Customizability – we can add custom features for your application requirements

## Development Software

- Drivers for Windows® 7 – 32 and 64 bit, Server 2003, Server 2008, Windows® 2000, Windows® XP, and Linux®
- Linux Master Driver and SDK
- StreamBed™ Middleware from DVEO
- Synchronous API – High Level API
- DirectShow® filter

## Connector Diagram



## Ordering Info

DVB Master FD	Single ASI Input, Dual Outputs
DVB Master FD/R	Optional Failover Relay
DVB Master FD/HSO	High Stability Oscillator
(Model 101)	

## Specifications

<b>Dimensions</b>	
Width:	4.20 inches (10.67 cm)
Length:	6.875 inches (17.46 cm)
Thickness:	0.58 inches (1.47 cm)
<b>Typical Weight</b>	5.2 oz (147 g)
<b>Input/Output Connectors</b>	75 ohm BNC
<b>External Clock Input</b>	75-Ohm DC Blocked ECL
<b>Data Input/Output</b>	DVB ASI Coaxial, DVB Transport Stream
<b>Typical Power</b>	390 mA @ 5 V
<b>Operating Temperature</b>	0 to 55° C
<b>Operating Humidity</b>	To 90%, Non-condensing
<b>Status LED Indicators</b>	TX, Rx, Sync, Carrier
<b>Receive FIFO Size</b>	1.5 KB
<b>Bus Interface</b>	PCI 2.2, 5 V or 3.3 V
<b>Standard Oscillator Stability</b>	± 25 ppm
<b>Optional High Stability Oscillator</b>	± 2.5 ppm

## Block Diagram

