

Application Note: ASI Transport

Settings for DL1220 Encoders and Decoders to Transport ASI

DL1220 Encoder Settings:

- Rear Panel Scramble Select switch: Set to OFF
- Front panel Transmit Source Select switch: Set to SDI

DL1220 Decoder Settings:

- Rear Panel Scramble Select switch: Set to OFF
- Front panel Alarm Mode (ANA/SDI/EDH) soft setting must be set to SDI. Use the program (PGRM) and (ENTER) Test Screen Editor push-buttons on the front panel to change this setting. The setting will be displayed for a short time in the Receiver Light Level window when PGRM is pressed. While the display is indicating the mode, press ENTER until SDI is displayed. (Pressing the ENTER button will cycle through ANA-SDI-EDH modes.)
- To confirm SDI mode, set the Meter Select Switch to "A". When the unit is in SDI mode, four down arrows (indicating no analog audio) will be displayed in the Receiver Light Level Meter

Refer to DL1220 Manual page 4-11 for more information on changing the Alarm Mode setting.

Issues concerning the transmission of ASI as compared to SDI

Polarity:

DVB-ASI is a packet Transport Stream system which uses the standard 270 Mb/s transmission rate common in the broadcast industry. Unlike SMPTE 259M "SDI", DVB-ASI is polarity sensitive. That means that if the signal becomes electrically inverted anywhere in the signal path, the link will fail. The DigiLink Encoders and Decoders are designed to pass this signal unaltered (not electrically inverted).

Some SDI compatible equipment makes use of a feature in the active components which allows multiple outputs from the same device. In this case, every other output is inverting. While this works with SDI, it does not work with ASI. If the DigiLink 1220 is configured as above and fails to pass ASI through the network, examine the signal source and destination including video distribution amplifiers (DAs) and switches or routers for any electrically inverted signals.

Some manufacturers provide all outputs and inputs as ASI compatible, but in most cases those who do not, do not label or otherwise indicate which outputs are ASI compatible and which are not. Trial and error is often the only tool available.

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Timing:

DVB-ASI is specified to operate at 270.000Mb/s ± 100 ppm.

The DL1220D and DL2701D Decoders have a crystal controlled jitter management system (“Elastic Store”) which reduces the transmission of jitter in the 270 Mb/s SDI/ASI signal. This circuit has a frequency range which exceeds the specifications for SDI or ASI. The amount of excess frequency range for this circuit can vary from unit to unit due to component tolerances—it can be as large as several hundred ppm (typically ± 150 to ± 180 ppm); but it will always exceed the ± 100 ppm requirement of DVB-ASI.

What we have learned recently is that some ASI sources may be operated in a mode that puts them outside the DVB-ASI frequency range and therefore their signals may not pass through the Decoder (depending both on the amount of margin in the Decoder, and the amount of excess frequency error in the ASI source).

More than once, the cause of DVB-ASI being outside of the ± 100 ppm limit has been identified as operating the MPEG encoder in GenLock mode but without a GenLock source. A GenLock is an external timing clock which insures that the entire system is operating at the same rate. Usually this refers to the frame rate of the encoded video, but the serial rate (not the MPEG payload rate) of ASI has been found to be derived from this source on some designs. One example is a commonly found test card which has a user control for GenLock. When GenLock is set to “OFF” (internal timing), the rate is correct and operates with the 1220. When set to GenLock but with no GenLock input, the test card’s clock drifts to either a high or low extreme which is outside of the ASI specification.