

Feeding SFN Transmitters with SR-Systems Components

Application Note

Introduction

For a SFN transmitter system that consists of a MIP inserter at the playout site and SFN adaptors in front of or embedded into each transmitter, the DVB datastream that is transported from the MIP inserter to the SFN adaptors has to be necessarily **unchanged**.

This is not a problem when the connection is made via ASI cables, ATM links or special link transmitters. Nevertheless, there are two issues when standard DVB components like the SR-Systems boards are used to transport the data from the MIP inserter to the SFN adaptors:

PCR Correction:

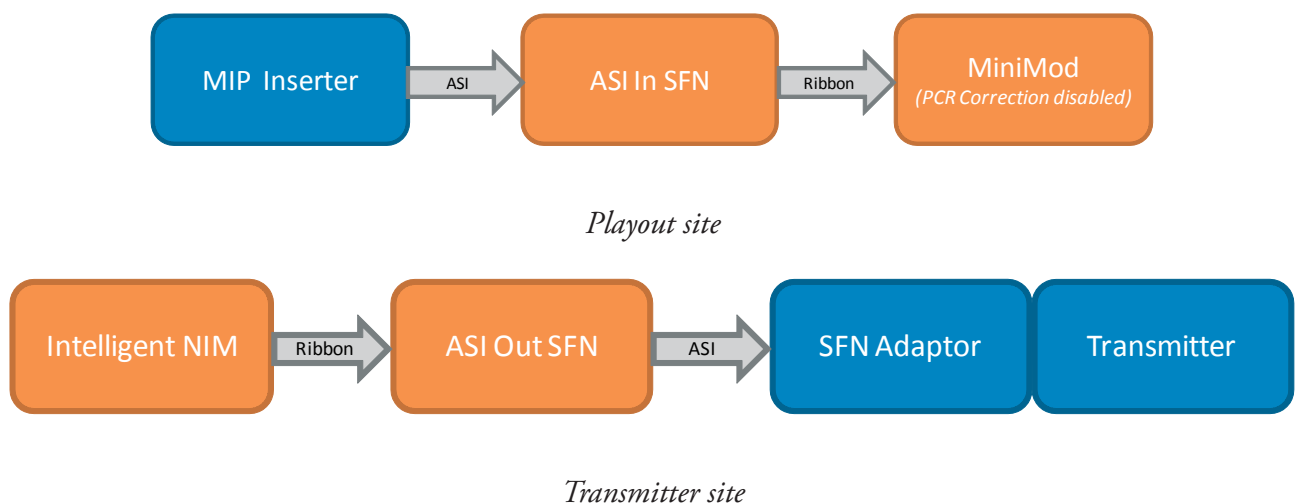
ASI adaptors and modulators will correct the PCR of the packets passing through them in order to compensate for small delays introduced by the components. The PCR correction will probably yield different values on different links due to crystals with slightly different clocks and other factors.

For the purpose of feeding a SFN Adaptor, the PCR correction in **all** components in the link must be disabled. The slight delays that are introduced by the components do not matter as the SFN adaptor will collect and buffer all the transport stream packets before feeding them to the transmitter at exactly the right time.

Bitrate Adaption:

Modulators must do bitrate adaption by inserting and removing stuffing packets (PID 0x1FFF) if necessary. As DVB-S/DVB-C/DVB-T provide no mode to transmit nothing,¹ the modulator must send stuffing packets if there is no data on the input port.

On the other hand, the SFN Adaptor depends on getting exactly the same stuffing packets from the MIP Inserter at exactly the same position where the MIP Inserter sent them. So for the link via standard DVB components, those stuffing packets must be protected from being dropped or added to by the modulators on the link.



The picture above shows an example setup of using SR-Systems components to transport data from the playout site to the transmitter sites in an SFN network setup.

¹ This is different with DVB-S2, but doesn't matter for our purpose.

The Role of the ASI In SFN and ASI Out SFN Modules

The ASI In SFN module must be placed directly after the MIP inserter on the playout site. It will remap all stuffing packets from PID 0x1FFF to PID 0x1FFE and thus protect them from any bitrate adaptation. The ASI Out SFN module must be placed directly before the SFN Adaptor (or the transmitter with built-in SFN Adaptor). It will drop all stuffing packets on PID 0x1FFF inserted by the modulator and remap the stuffing packets from the MIP inserter back from 0x1FFE to 0x1FFF.

Configuration of the ASI In SFN Module

Please make sure that you are using an ASI input module with SFN extensions. Those modules are **not** identical to the standard ASI In modules and are marked by a label that says “ASI In SFN”.

On such a module, you need to set **two** jumpers. First, set the jumper on Connector #2, Pins 3-4 to enable the PID remapping from 0x1FFF to 0x1FFE. Secondly, set the jumper on Connector #2, Pins 5-6 to disable the PCR correction. Without those jumpers, the ASI In SFN module works just as a standard ASI input module.

Please refer to the ASI In SFN Datasheet (www.maintech.de/DSAIS) for exact information about those jumpers.

Configuration of the ASI Out SFN Module

Please make sure that you are using a ASI output module with SFN extensions. Those modules are **not** identical to the standard ASI Out modules and are marked by a label that says “ASI Out SFN”.

On such a module, you need to set **one** jumper on connector #4, Pins 15-16 to enable the PID remapping from 0x1FFE to 0x1FFF. There is no PCR correction in the ASI Out SFN module and thus no need to disable it.

Please refer to the ASI Out SFN Datasheet (www.maintech.de/DSAOS) for exact information about those jumpers.

Configuration of the Modulators

Both modulators, the MiniMod and the V7 module, support disabling the PCR correction in the latest software versions. If this option is not available in the menus, please contact us for a possible software update.

It is important to disable the PCR correction in the modulators on the link to make the SFN network work properly.

About the Link Speed

The modulation parameters on the link must be set to result in a datarate slightly higher (about 2% more) than the datarate of the transport stream that comes out of the SFN Adaptor. So it is **not** possible to feed a SFN transmitter with a link that is set to the same modulation parameters as the SFN transmitter itself.

Errata/corrections:

2010-03-18. v1.0 en

2010-04-01 *links added*

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We are happy to receive your comments and questions.

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