DST100
DVB Subtitling
& Teletext
Converter

DST100

● Conversion of non-compliant teletext and subtitling ●
● Conversion of teletext subtitling to DVB subtitling ●
● No additional decoding and encoding required ●
● No loss of picture quality ●
● SNMP ● ASI and GbE ●

ITNM Systems DST100
DVB Subtitling & Teletext Converter

Operational excellence of digital television

Digital television distribution systems make use of signals coming from program suppliers all over the world. A network operator combines these signals to one complete and varied bouquet. For user-friendliness it is important that the properties of the channels - like sound level, picture, programme information, teletext and subtitling – differ as little as possible. In practice, these properties appear to be quite different or sometimes some of the components are sent in another format, what could lead to a loss of functionality and degrades the quality of service. With maximum customer satisfaction, ITNM Systems develops applications that help to minimise the differences and convert the components in a way they can still be used after all.

DST100 DVB Subtitling & Teletext Converter

ITNM Systems has developed a converter system for signals coming from program suppliers that are transmitting a different form of teletext and subtitling. An example is the proprietary system that is used by Discovery and related thematic channels. If such a channel is distributed directly in a digital head-end system, it is most likely that consumers using a set-top box of another brand cannot make use of teletext and subtitling. It is also possible that there is no link to the page where subtitling is supplied. This is not only a lack of functionality; it is also confusing because there is a different way of appearance compared to other channels. It is also possible that there is a loss of service now and then or a wrong display of text caused by a deviation of the standards where television sets and set-top boxes are based on.
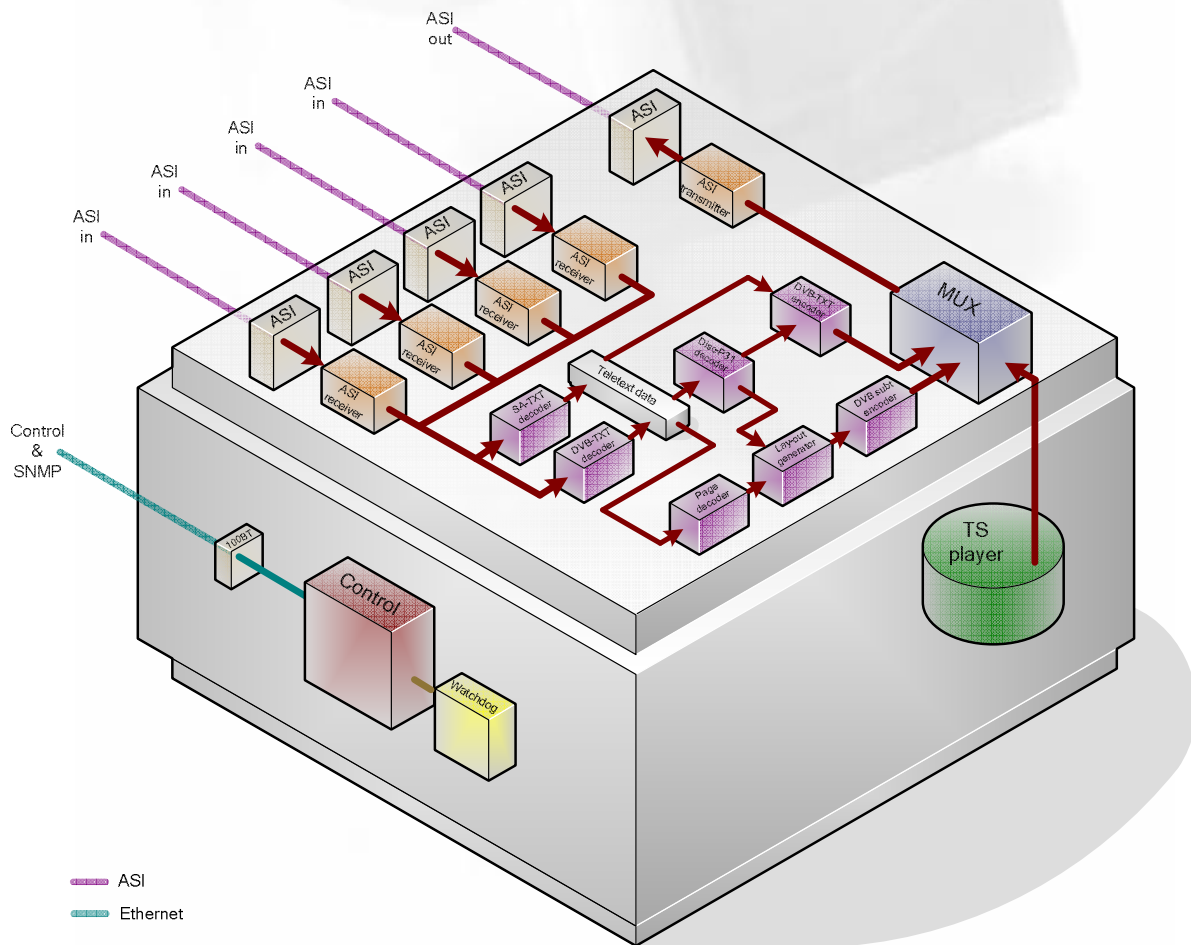
DST100

DST100
Product description

The solution

The task of the DST100 is to convert the teletext and subtitling information out of the digital transport stream coming from the programme supplier, to an alternative and compliant data stream. The network operator in the digital head-end multiplex centre can easily add this signal to the channel. As a result of that, the decoder is enabled to process teletext data correctly and to display subtitling automatically. If a certain channel supports subtitling in several languages, then the DST100 will support the necessary data to display these options in the relevant menu.

Flexible ways to connect simplify the integration in an existing system.

Connections

Input for the system is the output signal of one or more DVB decoders – multiplexed or separately supplied - of the proprietary system. For maximum flexibility two options are available to connect, by means of decoded ASI-signal (Asynchronous Serial Interface) or analogue composite video. By offering both options, integration is also possible with decoders equipped with only one of these outputs. The base version of the system has one ASI-input and one ASI-output.

Schematic overview DST100
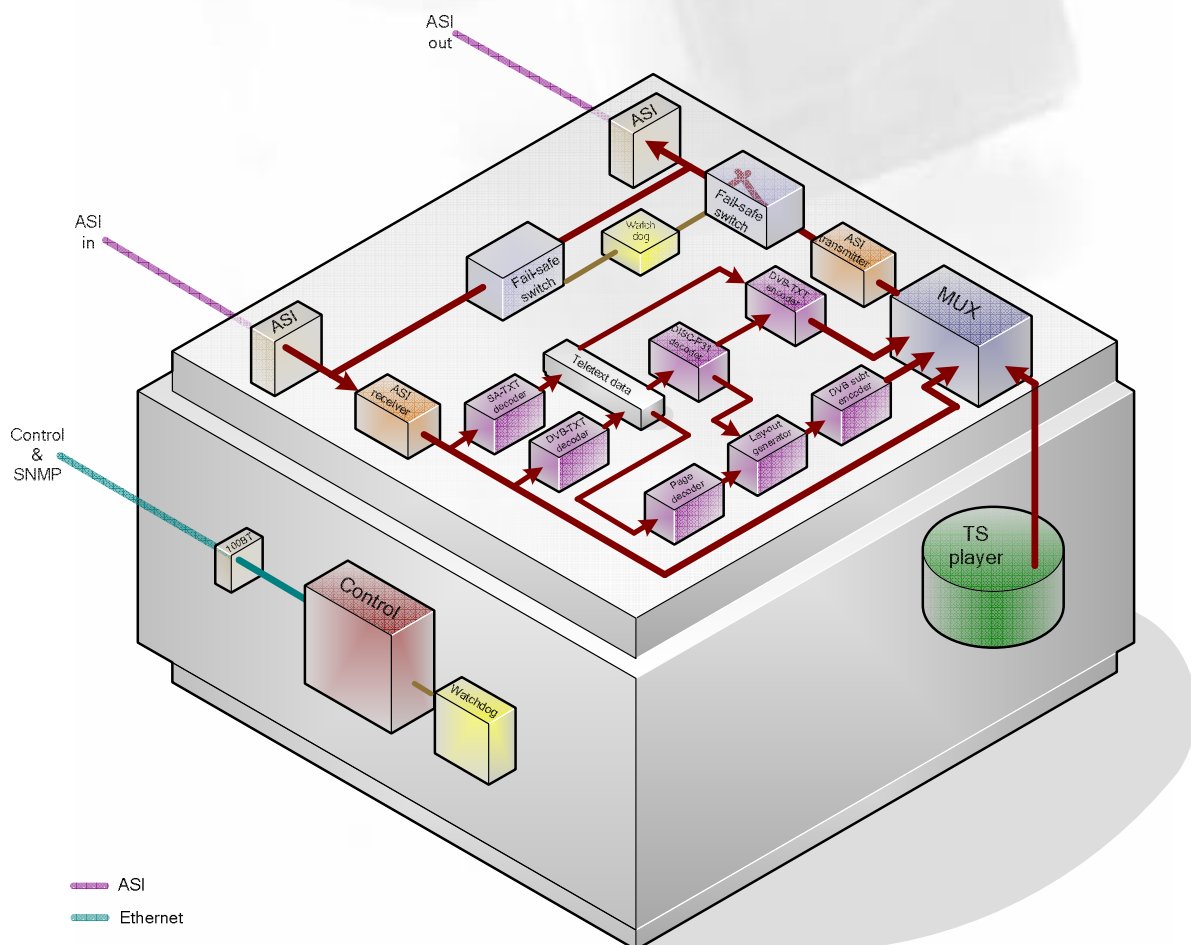
DST100
Product description

In order to connect several sources, like separated satellite receivers, the system can be equipped with an additional input card provided with four ASI inputs.

Transparent processing

If it is desired to pass through all the data by the DST100, the system can be supplied with transparent processing. In that case all the audio and video data available in the transport stream is combined with the teletext and subtitling data generated by the system.

To improve the availability, the ASI version comes with a built-in loop-through relay, which automatically connects the output with the input in case of a failure or loss of power. It means that there is no loss of transmission in that case.

Other ways to connect are available on user request. The drawings show an overview of the internal construction.

Schematic overview DST100T

DST100

DST100
Product description

Functionality

The DST100 is capable of processing ten different television channels simultaneously. Incorrect punctuation marks and hyphens in the text will be adapted to the local language. The teletext signals are combined to one complete multiplex with PMT (Program Map Table), PCR (Program Clock Reference) and PTS (Presentation Time Stamps). For smooth further processing the multiplex is supplied with the required reference signals (descriptors). The application is capable to generate subtitling in graphical DVB format, what can be an additional service in case consumer set-top boxes are able to process this. Subtitling then can be displayed with the same high broadcast quality as transmitted in the video signal by professional programme suppliers

Channels

At the moment the following channels are supported by the DST100: Discovery Science, Discovery Civilisation, Discovery Travel & Living, Animal Planet, Hallmark, National Geographic Channel and Cartoon Network.

No loss of picture quality

There are alternative methods where the signal is fully decoded and encoded again. This is a quite expensive method and it results in a loss of picture and sound quality. The DST100 however, fully works in the DVB domain where it can leave audio and video as it is. Moreover, it can support the decoder of the consumer in an optimum way for extended ease of use.

Options

Besides converting of proprietary systems, subtitling present in any teletext signal available by ASI or composite video can be converted into DVB teletext and DVB subtitling. An SNMP-generator - suitable to display the status of the system - is standard. The system is preconfigured and ready to install. Adaptation according to customer demands is possible as well.

Discovery teletext

DST100

DST100
Product description

Integration in networks

The DST100 is applicable in several kinds of
network architecture. Implementation is
possible in DVB-C/S/T and IPTV-networks.

Implementation

Normally the system is placed at the location
where centralised processing of digital radio and
television services is performed; the head-end
or digital play-out centre. There are many ways
to connect, depending on the construction of
the existing multiplexer and receiver
equipment.

Connections

In the standard set-up, all digital video and
teletext transmission is done by ASI signal
(Asynchronous Serial Interface). The input of
teletext signal is also possible by means of
composite video. At the output the DST100
supplies all required components for a
successful integration. Communications with the
DST100 for maintenance and SNMP is done by
common Ethernet.

Examples

The following drawings show examples of
implementation of the DST100 in several kinds
of network design.

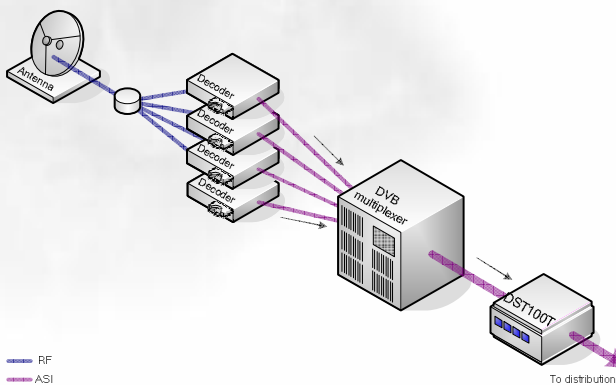## Application using ASI-multiplex

This drawing shows an example of the use of
separate receivers, each one equipped with an
ASI output. A combination with a multi-channel
receiver can also be used. The signal is routed
to and from the DST100 through the DVB
multiplexer. One single ASI input and one output
cable will do.
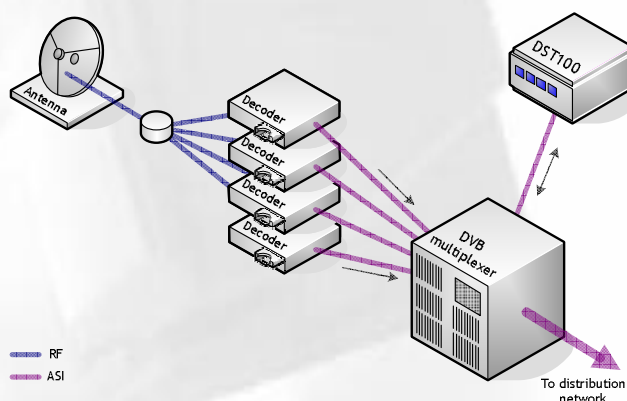
DST100 via ASI-multiplex

Application transparent processing via ASI

If transparent processing is desired, the DST100T
can be applied, which is able to pass through
the audio and video data together with
generated teletext and subtitling.

DST100T via ASI-multiplex

DST100

DST100
# Product description

Application using ASI

In case it is not possible or not desired to connect through the multiplexer, then the DST100 also accepts ASI input signals directly coming from the satellite receivers. The combined output signal runs over one ASI connection to the multiplexer where the required teletext and subtitling components can be added to the channels.
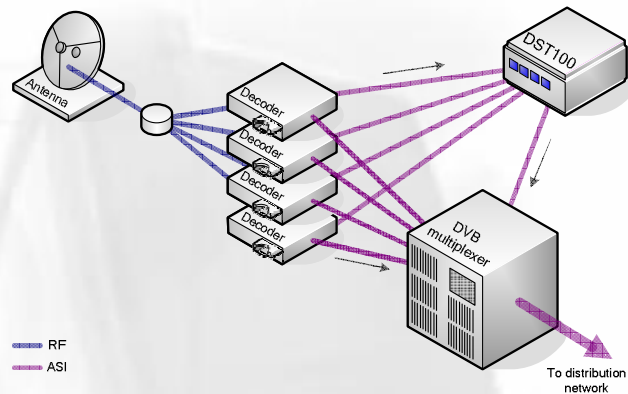
DST100 directly supplied

Application using composite video

Processing of teletext information is also possible by means of composite video in case the receiver is not equipped with an ASI output. If the composition of the composite signal is complete, the functionality remains the same. Besides application in proprietary systems, any other teletext source can be converted into DVB teletext and DVB subtitling.
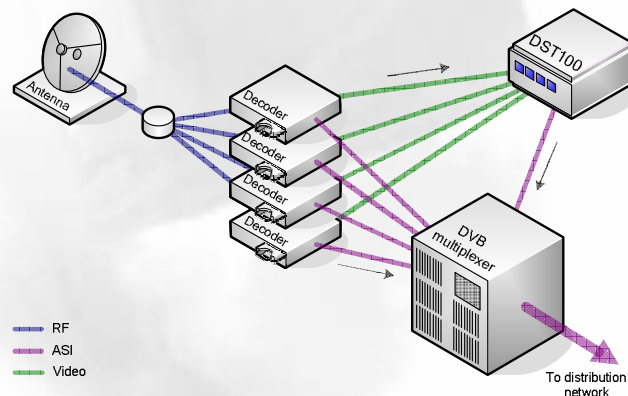
DST100 by video

DST100

DST100
Specifications

Capacity

- 10 television channels teletext and subtitling simultaneously

Functionality

- Conversion of non-compliant teletext and subtitling

- Adaptation of incorrect punctuation marks and hyphens in the text

- Adaptation of text height in case steering information is sent by the channel

- Conversion of teletext subtitling to DVB subtitling (graphical format)

- SNMP

- ASI connections

Options

- Conversion from teletext subtitling to DVB subtitling.

- Conversion of teletext coming from analogue sources to DVB teletext

- Transparent processing (DST100T)

- Gigabit Ethernet input and output (DST100IP)

- Composite video inputs

- User specific demands

ITNM Systems reserves the right to change the specifications.

DST100

DST100
Foundation

Construction

The foundation of the DST100 is a Supermicro industrial server controlled by Linux operation system. The power supply and hard disk can be swapped from the outside. A watchdog circuit is monitoring the availability continuously. Communications for maintenance and SNMP can be done by means of common Ethernet. The foundation can optionally be equipped with redundant power supplies and ditto hard disks. Delivery based on a HP Proliant server is also an option.

Front and rear panel of the industrial server

Standard configuration

Industrial server
Watchdog circuit
Swappable power supply and hard disk
No keyboard or mouse needed to start up
Mains 230 V 50 Hz (other available on request)
Used power 150-250 W*
Colours beige and black
Dimensions (width x depth x height):
1 RU = 438 x 681 x 43 mm

Environmental conditions:
Temperature range storage 0 – 50 °C
Temperature range operating 10 – 35 °C
Humidity 8%-90% non-condensing

Safety and EMC:
CE compliant (EN 60950/IEC 60950)

Connections:
1 x MPTS input (ASI)
1 x MPTS output (ASI)
1 x Control/SNMP (10/100/1000 Base-T)

Connection options:
2 x MPTS/SPTS input/output (GbE 1000Base-SX, LC duplex connector)

Up to 4 x MPTS input (ASI)
Up to 5 x video input (composite)

* Dependent on the configuration.

ITNM Systems reserves the right to change the specifications of the configuration.

DST100

DST100
Management

Purpose

Besides powerful and advanced functionality and cost-effective design, durability of a part in a digital television broadcast system is of course of vital importance. A service level agreement is the appropriated means for a user defined improved or continuous availability.

Service level agreement

A service level agreement covers preventive as well as corrective maintenance of the whole system as well as possible bugs in the applications. The standard rate is 7 % of the installed base per year. The standard coverage in the Netherlands implies a maximum response time of one hour during seven days a week between 9 o'clock in the morning and 11 o'clock in the evening. The response time at the location is four hours maximum. Spare material can be included on customer's demand as part of the delivery.

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