XBT 529

Broadcast Transport Stream Multiplexer

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Description

Multiplexer for 3 layers ISDB-T (188 bytes) which produces a BTS signal (204 bytes).
The XBT 529 is a multiplexer designed mainly to perform adaptation of data from TS (ISO/IEC 13818-1) to BTS (ABNT NBR 15601). The BTS to TS adaptation is provided by BTS to 188 bytes format encapsulation (BTS tunnelling) and a network adapter that generates, from multiple input Transport Streams (TS).
The XBT 529 manages 3 types of inputs: TS, BTS and BTS tunnel. The BTS tunnel is based on MBITL standard defined to enable the data transmission with radio links that allows only the 188 bytes format. In the BTS tunnel output, the BTS 204-bytes data are divided in 184 byte groups and to each group an MPEG-2TS 4 byte header is added.
The TS coming from ASI 1, 2 and 3 inputs are processed as layers, defined in the ISDB-T standard, to create a BTS:
1. ASI1: Layer A
2. ASI2: Layer B
3. ASI3: Layer C
Each layer input should be a TS composed by:
• data adapted to the bitrate specific for the layer to which the input is dedicated.
• empty packets (place holder packets) flagged with PID 0x1FFE adapted to layer A bitrate
• empty packets (place holder packets) flagged with PID 0x1FFD adapted to layer B bitrate
• empty packets (place holder packets) flagged with PID 0x1FFC adapted to layer C bitrate

The output packets format is 204 bytes. The last 16 bytes are filled with stuffing bits except the bits [0...4] of the byte 190 and the bits [0...7] of the byte 191 that are used for the packet counter reset each Multiplex Frame (defined by ISDB-T standard as a group of packets whose number is dependent on Modulation Mode and Guard Time).
The outputs bitrates and packets sequence are set according to the ISDB-T modulation configured.
The XBT-529 assembles the BTS output aligning the input Layer A, B and C TSs and removing the place holder PIDs. The 188 format TS input packets are increased to 204 by adding the 8 Transmission and Multiplexing Configuration Control (TMCC) bytes plus 8 stuffing bytes. The TMCC contains information about the relative packet type, packet position in the frame and eventually about AC data added as dummy data. In case of 204 format TS inputs packets the last 16 bytes are overwritten.
A group of packets whose number is dependent on Modulation Mode and Guard Time is defined as BTS Multiplex Frame (MF). For each output BTS MF the XBT 529 inserts an ISDB-T Information Packet (IIP) that contains information about layers modulation and eventually about network synchronization for SFN transmission.
All relevant IIP and TMCC parameters are configurable by user.
Layer A, layer B and layer C modulation parameters must be set aligned with the respective inputs bitrate.
The IIP and Null packets insertion sequence, to create the output BTS, depends on the modulation parameters set.

Main Features

Data Inputs
The BTS input can be provided through different physical input interfaces:
• ASI (8x);
• SPI (1x);
• GbE (2x).

Synchronization:
Input source device, XBT 529 and modulator have to be the 10MHz frequency reference synchronized to guarantee a single data bitrate reference.
In case of SFN transmission the synchronization is required for the 1PPS frequency reference.
The 10MHz and 1PPS synchronization is possible thanks to the selection of GPS or external source as frequency reference.
The 10MHz and 1PPS outputs permit to use a device as frequency reference source for the network following device.

Data Outputs:
The XBT 529 provides two types of outputs: BTS and BTS tunnel.
The output BTS is selectable between different input BTS:
1. BTS0: coming from ASI1, 2 and 3 inputs (Layer A, B, C) processing
2. BTS1: coming from the de-tunnelling of ASI4 input BTS tunnel
3. BTS2: coming from GbE 2 input BTS.
4. BTS3: coming from SPI input BTS
The output BTS tunnel comes from the tunnelling of the selected BTS. The BTS tunnel out packets PID is settable by user.

ScreenService

PHYSICAL	
Rack frame	1U
Size	(W) 484 mm x (H) 45 mm x (D) 346 mm
Weight	4kg

POWER SUPPLY		
90–270 VAC PFC corrected power supply		
Nominal power 38 VA		
Power factor: 0.95		
Max inrush current 15A		
M6 screw for extra ground connection		
Power cord	Default - Italy	
	Option "UK" – UK standard	
	Option "DIN" - Germany and central Europe DIN connector	
	Option "US" – US standard	

ASI INPUTS
EN 500083–9 compliant
BNC connectors 75 ohm
Maximum bit rate 155 Mbit

SPI INPUT
EN 500083–9 compliant
DB25 female connector
Maximum bit rate 27 Mbytes

ETHERNET CONNECTION
10/100/1000 Mbit Ethernet connector
1 IP address for web server, management, SNMP server, Telnet, TFTP and remote update
1 IP address for RTP/UDP server
1 IP address for RTP/UDP client
RTP protocol: ProMpeg cop3 with no FEC packet processing/generation

GPS INPUT
TNC connector 50 ohm
Phantom power 3 Volt 50 mA short circuit protected
GPS L1
12 channel simultaneous operation
45 s typical cold start TTFF
38 s typical warm start TTFF
5 s typical hot start TTFF
<0.5 s reacquisition
Sensitivity Acquisition/Tracking –185dBW / –185dBW
30ns rms accuracy, <10ns resolution

ASI OUTPUT
EN 500083–9 compliant
BNC connectors 75 ohm
Maximum bit rate as per ISDB–T standard

SPI OUTPUT
EN 500083–9 compliant
DB25 female connector
Maximum bit rate as per DVB–T standard

FRONT PANEL
4 x 20 alpha displays
8 button navigation
Basic setup and status

REFERENCE INPUTS	
10MHz	SMB connector
	1Vpp sine
	50 ohm terminated
	AC coupled
	Option "HIZ" available
1 sec PPS	SMB connector
	0.4 VIL
	1.7 VIH
	Dc coupled
	50 ohm terminated
	Option "HIZ" available

REFERENCE OUTPUTS	
10MHz	SMB connector
	1Vpp sine
	50 ohm
	DC coupled
1 sec PPS	SMB connector
	0.2 VOL @ 64 mA IOL
	2.2 VOH @ 64 mwA IOH
	Dc coupled
	50 ohm capable

SOFTWARE
Java applet requires Java 6 Version 13 or more recent
Java applet tested on Safari, Internet Explorer, Mozilla
Browser will download automatically suitable version of Java if connected to internet
SNMP is version 1 compliant
MIB files included in CD

Available Options

- "UK" – UK standard power cord
- "DIN" – Germany and central Europe DIN connector
- "US" – US standard power cord
- "HIZ" – 10MHz option "HIZ" available
- "HIZ" – 1 sec PPS option "HIZ" available
- "N1" – use relay and opto for SSBT N+1 system