# cProcessor

## CP330

## T2-Bridge

**Regional adaptation in DTT networks is a critical differentiator for network operators. The multi-version CP330 offers the ideal toolbox for regional adaptation in DVB-T and DVB-T2 Single Frequency Networks (SFN).**

The CP330's T-Bridge and T2-Bridge versions offer a flexible and highly cost effective solution for regional adaptation at DVB-T and DVB-T2 transmitter sites. By using Nevion's deterministic remultiplexing technology these two modes enable feeding of transmitters in multiple SFN regions using the same transport stream (TS) as used in a pre-existing Direct to Home (DTH) satellite system.

The CP330's PLP Replacer version is based on Multiple Physical Layer Pipe (M-PLP) technology and enables the insertion of local content by adapting an incoming national T2-MI feed and a regional T2-MI/Transport Stream (TS) feed.
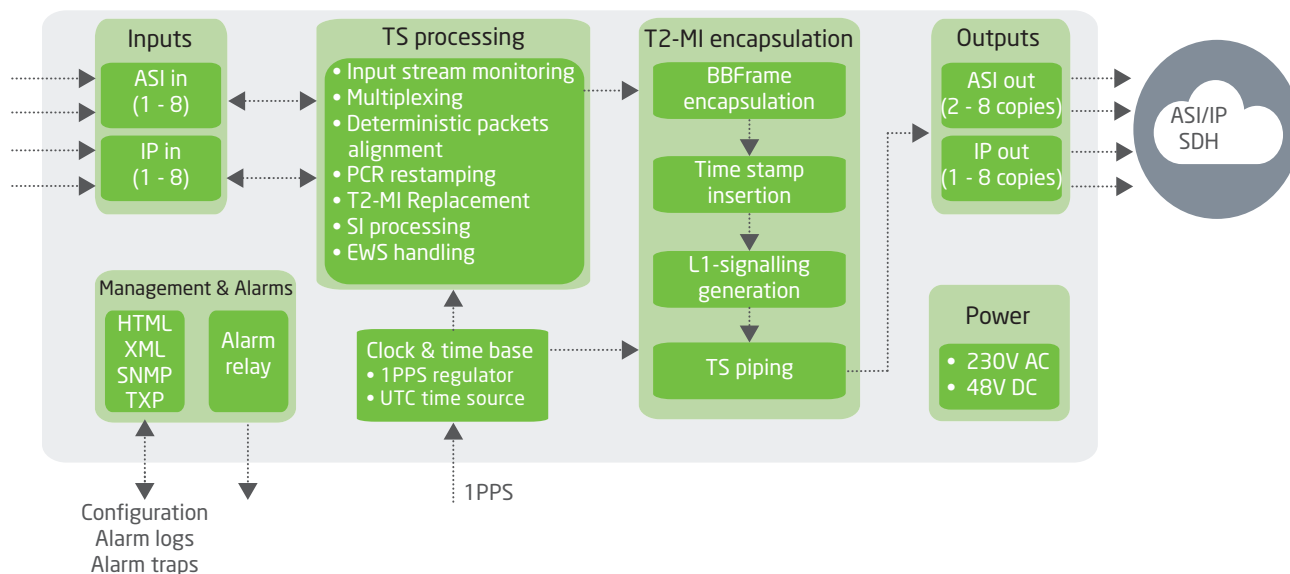
Nevion cProcessors can be configured via an easy-to-use web interface, which also offers extensive built-in stream monitoring. Scheduled software upgrades can be performed via Connect, VideoIPath, or any NMS.

## Applications

- Regional adaptation in DVB-T SFN networks where generating identical transmitter feeds is crucial
- Regional adaptation in DVB-T2 networks by reusing the preexisting DTH signal
- Regional adaptation in DVB-T2 networks using T2-MI signals (PLP replacement)

## Key features

- Deterministic remultiplexing for DVB-T and DVB-T2
- PLP replacement for regionalization
- Service Information processing
- Early Warning System (EWS) support
- Input stream monitoring
- ASI and IP input/output interfaces
- ASI pass-through i/o board
- Input redundancy
- User-friendly configuration and control
- Compact, cost-effective solutions with 2 units in 1RU

Inputs
- ASI in (1 - 8)
- IP in (1 - 8)

TS processing
- Input stream monitoring
- Multiplexing
- Deterministic packets alignment
- PCR restamping
- T2-MI Replacement
- SI processing
- EWS handling

T2-MI encapsulation
- BBFrame encapsulation
- Time stamp insertion
- L1-signalling generation
- TS piping

Outputs
- ASI out (2 - 8 copies)
- IP out (1 - 8 copies)

ASI/IP SDH

Management & Alarms
- HTML XML SNMP TXP
- Alarm relay

Clock & time base
- 1PPS regulator
- UTC time source

Power
- 230V AC
- 48V DC

Configuration
Alarm logs
Alarm traps

1PPS

## Deterministic remultiplexing

The CP330 is able to remultiplex Transport Streams deterministically and generate identical outputs on all the units with identical configuration. This is a crucial requirement for SFN operation.

## Reuse of DTH signal

The deterministic remuliplexing feature allows operators to use a Direct To Home (DTH) satellite to feed DVB-T and DVB-T2 transmitters. This capability reduces costs and efforts of feeding the transmitters.

## SFN synchronization

Using a 1PPS input, the CP330 generates a very accurate DVB-T2 time stamps and MIP packets for the synchronization of DVB-T2 and DVB-T transmitters in SFN networks. The continuity and accuracy of these time stamps is crucial for the SFN operation.

## Multiple PLPs

Transport stream inputs are remultiplexed and mapped to physical layer pipes (PLP). This feature allows for different protection and coding of data and services. The CP330 supports up to 8 PLPs.

## Early Warning System (EWS)

The CP330 PLP Replacer reacts to external triggers and can load an emergency configuration. The unit can transmit the emergency content on all channels.

## PLP replacement

The CP330 PLP Replacer performs regional adaptation in DVB-T2 networks based on PLP replacement. It enables the insertion of local content in predefined PLPs by adapting an incoming national T2-MI feed and a regional T2-MI/Transport Stream (TS) feed.
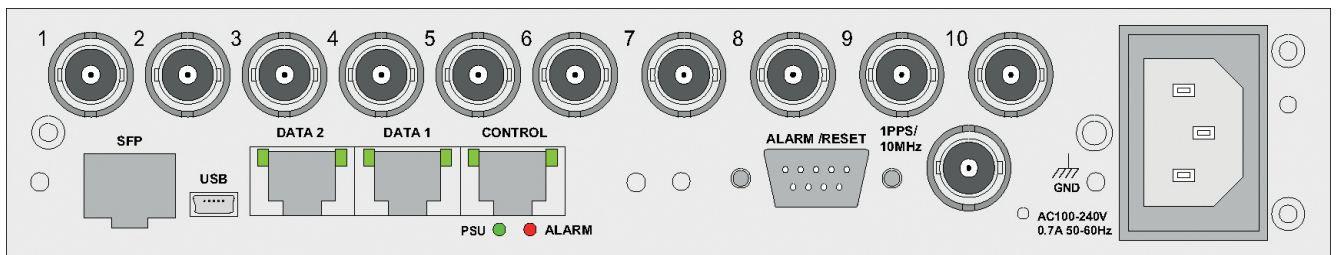
## Transport stream monitoring

In order to ensure error free processing, CP330 monitors the input streams according to TR 101 290 priority 1. In case of errors in the input streams, alarms are raised to inform the operator and traps are forwarded to the NMS.

## Transport stream over IP

The output transport stream is encapsulated according to SMPTE 2022-2 including the handling of FEC. (SMPTE 2022-1). CP330 supports multiple VLANs (IEEE 802.1Q), IP QoS and VLAN CoS/802.1P for per-flow traffic prioritization.

## User-friendly configuration

The user interface of the CP330 is simple and very intuitive, it is designed to help the operator configure the unit quickly. Running on any web browser the GUI can be accessed from any computer.

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## Transport stream interfaces

| | |
|---|---|
| DVB-ASI | 10 bidirectional DVB ASI ports (EN 50083-9, Annex B)<br>1-8 inputs/ 2 - 8 output copies<br>Bit rate: 0.1 - 213 Mbit/s<br>188 or 204 byte packet length<br>Burst and Spread mode<br>Female BNC connectors 75 Ohm |
| Gigabit Ethernet (option) | 2 x 100/1000Base-T Ethernet, 1 x SFP<br>Connectors: 2 x RJ45 (100/1000Base-T), SFP<br>TS Encapsulation: SMPTE 2022 -1/2<br>Forward Error Correction (FEC): SMPTE 2022-1<br>Protocols: IEEE 802.3 Ethernet, VLAN (802.1Q)<br>ARP, IPv4, UDP, TCP, RTP, IGMPv2/3<br>Up to 8 input streams over IP |

## Deterministic remultiplexing

Remultiplexing of inputs streams including rate adaptation and PCR restamping

Service and component based filtering and remultiplexing

PSI/SI remapping and regeneration

## DVB-T SFN adaptation

| | |
|---|---|
| Megaframe Initialization Packet (MIP) insertion according to ETSI TS 101 191 | |
| SFN operational modes | 2k and 8k modes in 8, 7 and 6 MHz bandwidth |

## DVB-T2 adaptation

| | |
|---|---|
| DVB-T2 MI encapsulation | DVB-T2 versions 1.1.1, 1.2.1<br>L1-signalling frames generation<br>Baseband frames encapsulation |
| Multiple PLP support | Up to 8 PLPs |
| SFN operation | DVB-T2 time stamps insertion<br>DVB-T2 MIP insertion |
| Bandwidth support | 1,7MHz, 5MHz, 6MHz, 7MHz, 8MHz, 10MHz |
| Individual addressing | MISO<br>PAPR parameters |

## PLP replacement

DVB-T2 regionalization using local T2-MI insertion or PLP replacement at transmitter sites

Service Information (SI) adaptation

Early Warning System (EWS) handling

## Time synchronization

| | |
|---|---|
| Clock reference | 1PPS input (50 Ohm female BNC) |
| UTC time reference | SNTP over the management interface (RJ45) |

## Redundancy and monitoring

Synchronization of DVB-T2 frames between units operating in 1+1 configuration. The synchronisation is software based and does not require communication between the units.

| | |
|---|---|
| Input signal monitoring | TR 101 290 priority |

Optional ASI signal passthrough for PLP replacement mode

## Management & control

| | |
|---|---|
| Management port | 10/100 Base-T Ethernet Connector. |
| Element control through HTTP/WEB based GUI | |
| XML Configuration import and export via HTTP | |
| SNMP agent for integration with Network Management System (NMS) | |
| Protocols | HTTP, XML, SNMPv2c |
| Alarm relay | 9 pin D-SUB. Two relays supported; one at configurable alarm level |
| Maintenance port | USB version 1.1 |

## Physical and environmental characteristics

| | |
|---|---|
| Input voltage | 100-240V AC +/- 10%, 50/60 Hz, optional: -48V DC |
| Power consumption | 35W max |
| Dimensions | 1RU, ½-width 19"<br>(WxDxH) 210 x 300 x 44.5mm |
| Operating temperature | 0˚C to 50˚C |
| Storage temperature | -20˚C to 70˚C |
| Relative humidity | 5% to 95% (non condensing) |
| Compliance | CE: 73/23/EEC (Low voltage equipment)<br>89/336/EEC (Electromagnetic compatibility)<br>CSA: Designed for CSA approval<br>Safety: IEC60950 and EN60950<br>EMC: EN55022, EN55024, EN6100-3-2 |

## Product options

| | |
|---|---|
| CP330-DC | - 48V DC power supply |
| CP330-AC2 | Dual 230V power supplies |
| CP330-ASI-FBR | ASI pass-through i/o board |
| CP330-SFP | Enable SFP socket |
| CP330-IP | Enable Ethernet interfaces for TSoIP inputs and outputs |
| CP330-FEC | Enable Forward Error Correction for the IP interfaces |
| CP330-ASIN | Enable ASI ports |
| CP330-PLPR | PLP replacement mode |
| CP330-REWS | Early Warning System (EWS) support |
| CP330-SIR | Service Information (SI) processing |
| CP330-DVBT2 | DVB-T2 deterministic re-multiplexing support |
| CP330-DVBT | DVB-T deterministic re-multiplexing support |
| CP330-T2SFN | Enables T2 SFN framing and generation of DVB-T2 time stamps for SFN operation (for deterministic re-multiplexing mode) |
| CP330-PLPx | Additional PLPs including TS inputs (for deterministic re-multiplexing mode) |
| CP330-TSIx | Additional transport stream inputs (for deterministic re-multiplexing mode) |

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# cProcessor

**Our award-winning cProcessor transport stream processing and multiplexing products make the complex simple.**

Even better, they enable tailoring of regional and local service packages, component filtering, advanced updating of PSI/SI/PSIP tables, and enhanced quality of service.

User friendly, highly robust and cost effective. It's this simplicity and performance that has secured our place in some of the world's most advanced terrestrial networks.

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