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TNS544

TSoIP Switch

The TNS544 TSoIP Switch is an ideal solution for intelligent redundancy switchover between MPEG transport streams in IP or hybrid IP/ASI networks.

The TNS544 TSoIP Switch reduces cost for redundancy by offering up to four seamless switches per RU.

The flexible interfaces (ASI/IP/SDH/SONET) eliminate the need for interface adaptation equipment reducing the costs and the risk of failure of third party equipment.

Maximize the uptime of your broadcast services by continuously monitoring all inputs and switching seamlessly to a backup source if errors are detected or signal is lost.

The TNS544 offers powerful IP tools for FEC, Quality of Service (ToS/CoS), VLAN and routing are also supported.
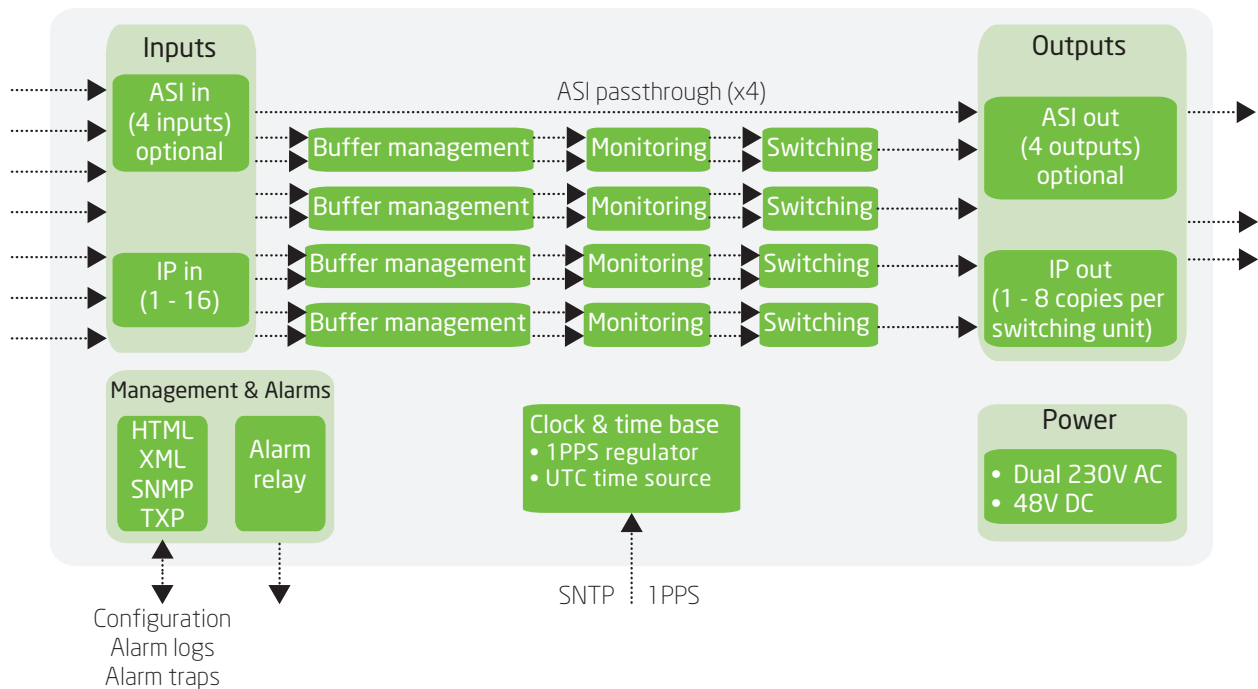
Nevion nSure products can be configured via an easy-to-use web interface and interact with overlaying network management systems. Scheduled software upgrades can be performed via Connect, VideoIPath, or any NMS.

Applications

- ASI/IP networks requiring top class reliability
- Satellite, terrestrial and cable distribution and contribution
- Seamless switching in DVB-T/T2 SFN networks

Key features

- Intelligent seamless switching between multiple ASI and IP input streams
- Multimode operation for adaptive TS matching (SFN/Null packet agnostic/ TS/ PID)
- Flexible switch configuration
- Seamless switching in DVB-T/T2 SFN networks
- Integrated TS monitoring and error detection based on ETR 101 290 input monitoring and error detection
- Industry-leading support for IP video technologies
- Forward Error Correction on input and output
- Dual GbE interfaces
- Dual power supply
- User-friendly configuration and control

Inputs
- ASI in (4 inputs) optional
- IP in (1 - 16)

ASI passthrough (x4)

- Buffer management → Monitoring → Switching
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Outputs
- ASI out (4 outputs) optional
- IP out (1 - 8 copies per switching unit)

Management & Alarms
- HTML XML SNMP TXP
- Alarm relay

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

Power
- Dual 230V AC
- 48V DC

Configuration
Alarm logs
Alarm traps

SNTP : 1PPS

Seamless TS switchover

Seamless switchover between incoming streams without interruption on the output. Incoming streams are matched and aligned to handle delay differences.

SFN seamless switchover

Synchronized and seamless switchover between two different SFN streams or T2MI streams ensures that modulators remains synchronized in an SFN network.

Adaptive stream matching

Transport streams can be matched and aligned according to several criteria. The TNS544 can perform regular TS matching or use SFN information for matching. If necessary the unit can disregard the distribution of the null packets or match according to a user defined PID.

Flexible switching criteria

Easy configurable switching criteria to provide maximum flexibility to the user. Manual or automatic switching based on ETR 290 alarm conditions enable the tailoring of the redundancy behaviour.

Robustness and reliability

Dual power supply for increased reliability. Relay protected ASI outputs ensures signal passthrough in the event of power loss or power supply failure.

Scalability

The TNS544 offers flexible configuration of inputs, number of switches and outputs. It can be delivered with up to four switch modules per unit. Each switch supporting up to four inputs. Delay differences between the inputs are automatically compensated enabling seamless switching and preventing service outage for the viewers.

Advanced IP capabilities

TNS544 supports IP unicast and multicast, as well as output diversity. A transport stream can be sent to multiple unicast or multicast IP destinations. Powerful IP tools for FEC, Quality of Service (ToS/CoS), VLAN and routing are supported.

Transport stream monitoring

Continuous and simultaneous monitoring and error detection of input signals to ensure error-free operation. Error detection is performed according to ETR 101 290 priority 1 and 2.

User-friendly configuration

The user interface of the TNS544 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

Gigabit Ethernet:	up to 16 transport streams over IP (TSoIP) 2 x 100/1000Base-T Ethernet, 1 x SFP Connectors: 2 x RJ45 (100/1000Base-T), SFP TS Encapsulation: SMPTE 2022 -1/2 Protocols: IEEE 802.3 Ethernet, VLAN (802.1Q) ARP, IPv4, UDP, TCP, RTP, IGMPv2/3)
DVB-ASI (optional)	4 DVB ASI inputs (EN 50083-9, Annex B) 4 DVB ASI outputs with passthrough 188 or 204 byte packet length Burst and Spread mode Female BNC connectors 75 Ohm

Switching capabilities

No. of switches	1-4 switches per unit
No. of input per switch	2-4 TS inputs per switch
Switch configurations	2:1, 3:1 or 4:1
No. of outputs per switch	4 TS outputs per unit with 1-8 TS outputs copies
Max TS over IP inputs	16 (4x4) with a total bit rate of 200Mbps
Switching modes	Manual Automatic with input prioritization
Matching modes	Transport stream Ignore Null Packets SFN using MIP (DVB-T) and T2-MI (DVB-T2) Specific PID
TS delay compensation	Automatic or manual
Frame aligned switchoverbetween SFN streams from two CP525 cMUX Remultiplexers with preservation of MIP packets	
Frame aligned switchover between T2MI streams from two CP560 DVB-T2 Gateways with preservation of T2 time stamps.	

Monitoring & alarms

Monitoring	ETR 101 290 Priority 1 real-time monitoring of all inputs Configurable thresholds values. Effective and total bitrate overview of all PIDs. Service analysis with Service Id, name and components. PID analysis (Type, scrambling and dynamic bitrate Graphical view of bitrate Bit rate monitoring with configurable min and max threshold for any PID
Alarms & logs	Standardized alarm levels according to ITU-T X.733 Configurable alarm severity level (individual, PID level, service level, input level) Circular events log for 10.000 entries Configurable and exportable (XML, CSV) logs

Time synchronization

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

Control and management

Management port	10/100 Base-T Ethernet Connector: RJ45
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, Dual power supply, optional -48V DC
Power consumption	35W max
Dimensions	1RU, full-width 19" (WxDxH) 420 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) 89/336/EEC (Electromagnetic compatibility) CSA: Designed for CSA approval Safety: IEC60950 and EN60950 EMC: EN55022, EN55024, EN6100-3-2

Oredring options

TNS544-HW-AC2	Dual load 100-240V AC power supplies.
TNS544-HW-AC2 -ASI-FBR	Dual load 100-240V AC power supplies with 4 ASI passthroughs.
TNS544-SSFN	Seamless SFN switching
TNS544-SFNR	SFN rate lock
TNS544-SFP	Operation of the SFP socket on the units
TNS544-FEC	Decoding of FEC streams at the input and adding FEC at the output
TNS544-SSWX(1-4)	Enable the operation of 1 to 4 TS switches

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By adding intelligence to monitoring and switching, our nSure products protect both the content owner and the network operator.

We deliver solutions for service fallback, redundancy switching including seamless switching and continuous monitoring of Video signals, transport streams, services, PIDs and PSI/SI/PSIP tables. In an increasingly complex broadcast infrastructure, our solutions simplify the day to day operations of the network operator and provide an ideal tool for video signals and transport stream handling, redundancy, error detection and correction and fast diagnostics of erroneous signals.

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