

# IPGuardV3

## 1+1 Smart Switch for IP Redundancy



**IPGuardV3 is  
ENENSYS'unique and  
secure solution that  
enables 1+1  
automatic  
redundancy of input  
streams with bypass  
mechanism.**

IPGuardV3 enables 1+1 Automatic IP switching with a hardware bypass mechanism. Designed for IP architectures, it can be used to switch between main & backup IP sources based on a set of configurable criteria in order to provide reliable IP transport and error-free streams.

### Automatic IP Switch

IPGuardV3 switches automatically between IP-based devices or IP networks by selecting the best streams based on configurable criteria. It is designed to provide automatic 1+1 redundancy of:

- any equipment that delivers TSolP or IP streams such as encoders, multiplexers, DVB-T2 gateways, MIP inserters, data servers,...
- any IP network used to transport IP streams, handling different delays.

### Seamless Switching

The IPGuardV3 offers seamless switching capability between two identical MPEG-2 TS, T2-MI, RTP or STL streams that are carried over redundant IP-based networks with different delays: it aligns both streams to perform a seamless switching. When combined with ENENSYS gateways, IPGuardV3 can provide a seamless switch-over between two gateways for ATSC3.0, DVB-T/T2 & ISDB-Tb networks.

### 100% Service Availability

By default, the IPGuardV3 offers an IP bypass mechanism in order to enable 100% of service availability in case of power outage. In this case, incoming IP streams are still delivered at the output.

### High Density Solution

Up to 6 IPGuardV3 modules can be housed in the same 1RU HDc chassis. One IPGuardV3 module is able to manage up to 6 TSolP switches based on advanced TS criteria, or up to 6 RTP Streams. It can also manage up to 60 IP switches based on IP conditions. With DaisyChain functionality, several IPGuardV3 can be serialized, increasing the whole processing capability to be convenient in applications dealing with high number of streams.

# IPGuardV3

## 1+1 Smart Switch for IP Redundancy

### Applications

- 1+1 automatic redundancy of IP equipment
- 1+1 automatic redundancy between IP streams
- DVB-T/T2 and ISDB-T automatic switch-over
- ATSC 1.0 & 3.0 automatic switch-over
- Seamless TSoIP switch-over
- Seamless T2-MI & STL over IP switch-over
- SMPTE2022-7 seamless protection switching
- Switch-over based on:
  - ETR290 1/2/3 and audio/video advanced criteria
  - STL criteria for ATSC3.0
  - IP dedicated criteria (RTP packet loss, stream jitter, stream presence, RJ45 error)
  - Bitrate scheduled criteria

### Other benefits

- Avoid TV black-out
- Avoid audio & video glitches in case of equipment or network link failures
- Multi-standard applicable (DVB, ATSC, ISDB,...)
- Video agnostic: MPEG-2, H.264 or HEVC
- Maintain service continuity
- High density & scalable solution with up to 60 switches in 1 module and 360 in 1U
- Synchronize different locations (head-end, transmission sites) with Peering feature
- Transparent for end-to-end devices

## Technical specifications

### INPUTS

#### Control

1x Gigabit Ethernet (RJ45) for GUI/SNMP

#### Data

2x Gigabit Ethernet (RJ45) for input streams

### OUTPUTS

#### Data

2x mirrored Gigabit Ethernet (RJ45) for output streams

#### Availability

Bypass mechanism to always output streams in case of power outage

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### FEATURING

#### Switching conditions

IP alarms (presence, bit rate,...)  
ETR290, MIP, and T2-MI alarms  
Advanced TS alarms  
SMPTE2022-7  
RTP packet loss  
Network jitter  
Scheduled monitoring

#### Seamless switch

Seamless switch-over between the same TS, T2-MI  
STL carried over IP (Option)  
Seamless switch-over between identical RTP streams  
SMPTE2022-7 compliant  
Alignement of delayed streams

#### UDP/IP stream management

Unicast/Multicast stream  
RTP support  
VLAN management

#### Network transparent bridge

No MAC/IP addresses for data interfaces  
IGMP Protocol supported

#### Peering

Peer several IPGuardV3 so that they select the same streams

#### Monitoring supervision

Real-time monitoring of incoming streams  
Web-based GUI (HTML5)  
Full SNMP v2 support

#### Automatic changeover

Up to 2 TS over switches - Optional : up to 6 TS  
Up to 6 T2-MI over IP switches  
Up to 6 STL over IP switches  
Up to 60 IP streams managed  
IP Bypass for service availability

#### Switching modes

Automatic switch  
Priority input  
Manual switch  
Least errors  
Peering to allow switching synchronisation between 2xIPGuardV3

#### FEC management

SMPTE 2022-1 (Pro MPEG CoP#3)  
FEC input correction (TSolP)  
FEC output generation (TSolP)

#### Network address translation

Modify IP characteristics of the incoming streams

#### Daisy chain mode

Serialization of several IPGuards to increase processing capacities

### PHYSICAL

#### HDc

#### Width

443,7mm / 17.46 in.

#### Format

1 RU, width 19"

#### Back Panel

The connector is a 5-position MiniConnec with a 3.81mm pitch.

#### Control IP Port

1x Gigabit Ethernet (RJ45) control port

#### Power consumption

24W/module

#### Height

43mm / 1.69in.

#### Depth

322,8mm / 12,70 in.

#### Front Panel

LCD Display and control

#### Power supply

100-240V 50-60Hz - 48V DC (option)

#### Data IP Ports

2x Gigabit Ethernet (RJ45) data port

#### Operating temperature

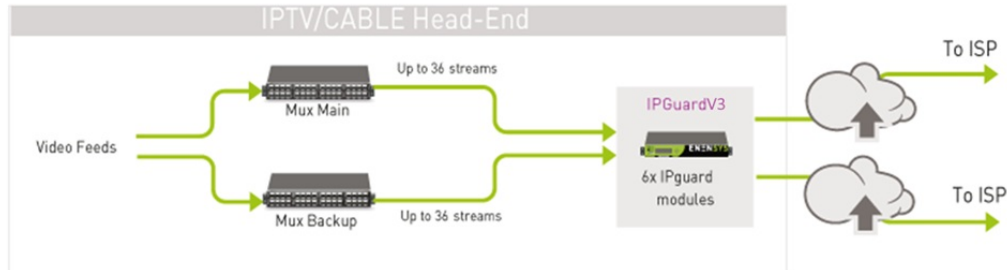
0 to 50°C / 0 to 122°F with 3 modules - 0 to 45°C / 0 to 113°F with 6 modules

# IPGuardV3

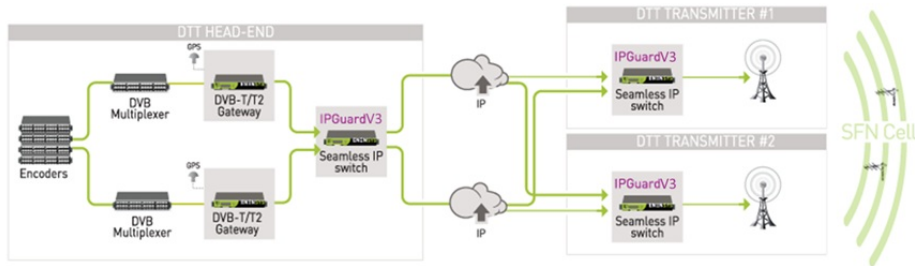
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### Automatic IP Redundancy - Typical Use-Cases

#### IPTV/Cable Head-End redundancy



#### DTT Service End-to-End redundancy



## Ordering codes

### HDmII\_IPGuardV3

- Automatic TSolP switch between up to 6 TSolP streams with FEC support
- 2022-7 support
- IP based switching conditions (stream bit rate/stream presence)
- ETR290 Level1, 2 and 3 based switching conditions for TSolP streams
- 1+1 switch at port level or stream level
- TS and T2-MI seamless switch capability
- Passive and advanced IP passthru mechanisms

## Ordering options

### IPGuardV3-Access

Pack Access including : 2TSolP, 60 IP Streams, Criteria Priority, Peering

### IPGuardV3-Ultimate

Pack Ultimate including : 6TSolP, 60 IP Streams, Criteria Priority, Peering, N+1 Redundancy, Seamless TS, Seamless T2MI, Seamless RTP, Seamless STL

### IPGuardV3-Performance

Pack Performance including : 2TSolP, 60 IP Streams, Criteria Priority, Peering, N+1 Redundancy, Seamless TS, Seamless T2MI, Seamless RTP