Amethyst™ III

IP & ASI REDUNDANCY SWITCH

For applications requiring fast, dense and reliable 2:1 MPEG-2 transport stream redundancy switching, the Amethyst™ III from Harmonic is the best-in-class solution to ensure 24/7 availability of digital TV signals.

When down time is not an option, you can depend on the Amethyst III. The compact, stand-alone system continuously monitors your MPEG-2 TS, seamlessly switching to a backup stream if the active stream is detected as being corrupted. Whether used for equipment redundancy or network-path redundancy, the Amethyst III offers the utmost in performance, flexibility and delay capability to increase robustness and maximize up time of your broadcast and transmission chains — and ensure that your MPEG-2 TS (DVB, DVB-T/T2 or ATSC) can be properly secured.

Offering up to eight 2:1 IP switches or four 2:1 ASI switches in 1 RU, the high-density Amethyst III provides cost, power and space savings, helping operators to save on CAPEX and OPEX.

Reliable & Flexible

Available with Gigabit Ethernet or ASI interfaces, the Amethyst III is suitable for any type of architecture: from widely deployed ASI-based headends to new IP-centric networks. The switch is equipped with dual power supplies/plugs to maximize service availability, and maintains service delivery via a smart and configurable bypass mechanism on the GbE and ASI interfaces — even in case of power failure.

Highly Configurable Testing

The Amethyst III measures the health of incoming streams via a wide range of configurable tests. It supports TR 101 290 tests (Priority 1/2/3) to provide a complete health-status check of your digital DVB network. The unit also supports testing and monitoring models that provide the same level of comprehensive information for ATSC environments. To improve redundancy, template checking of expected PIDs, rate limits and/or scrambling status of various critical program components are available. Each test can be configured and associated to a critical alarm level that either engages switching or logs the alarm. In addition, tests can be set to avoid unwanted switching in the case of transitory events (time persistence mechanism).

Delay Compensation Capability

The Amethyst III offers delay-compensation capability by simultaneously analyzing delayed input streams (from several milliseconds to several seconds). If one input is detected as being corrupted, the unit compensates for the time difference and switches seamlessly to the other uncorrupted stream without any disturbance to end users. The typical application is network distribution redundancy.

HIGHLIGHTS

- Dense 2:1 switch in 1 RU
  - Up to four TS over ASI switches
  - Up to eight TS over IP switches
- Seamless switching
- DVB, DVB-T/T2 and ATSC support
- Input delay compensation
- Smart bypass on ASI and GbE
- TR 101 290 Priority 1/2/3 analyses
- MIP analyses for DVB-T/SFN
- T2-MI/DVB-T2 analyses
- Template checking for stream content matches
- SMPTE 2022 FEC correction or generation
- Dual AC PSUs

Designed For Terrestrial Networks

When combined with the Harmonic NetProcessor™ 9030/40 multiplexer and video processor, the Amethyst III can perform seamless switching for DVB-T/T2 SFN terrestrial networks. For DVB-T, the Amethyst III preserves the mega-frame structure from the NetProcessor SFN adapter. For DVB-T2, it realigns the T2- MI streams from NetProcessor T2 gateways.

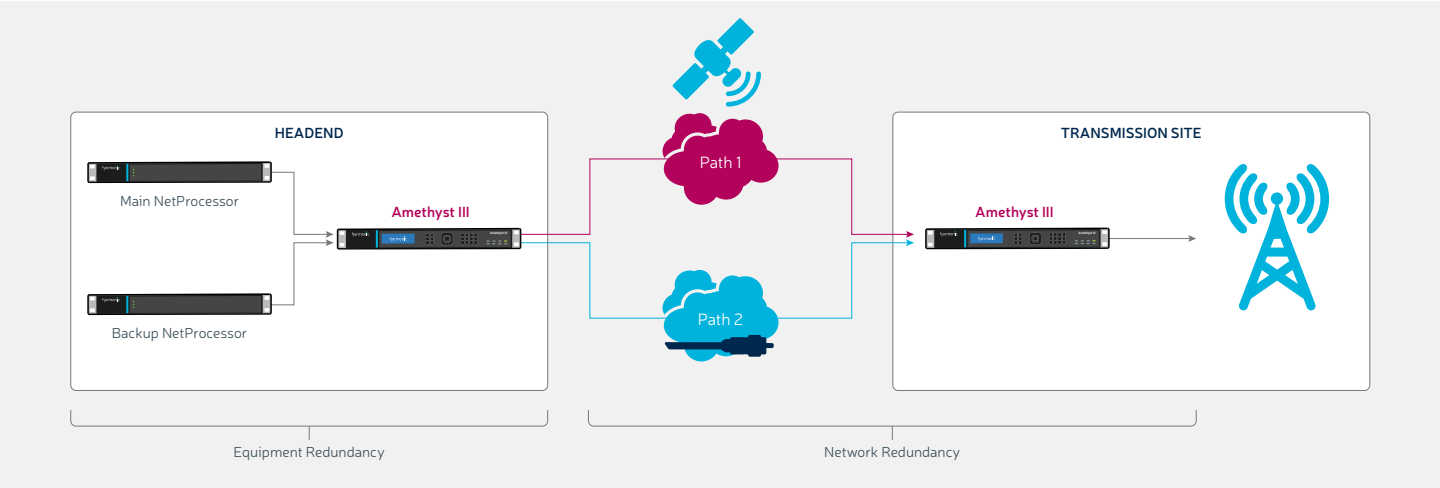
In case of switching, the Amethyst III preserves the structure and timestamp on its output, avoiding service outage on DVB-T/T2 modulators caused by resynchronization.

Configuration & Supervision

The Amethyst III is equipped with a 10/100Base-T port for control and supervision. The unit can be supervised and configured remotely through any standard web browser, and provides a complete display of switching configurations, along with easy-to-read input/output status information, error-log data and bitrate graphics. The Amethyst III embeds an SNMP agent for centralized management applications.

World-Class Service and Support

Harmonic stands behind the Amethyst III switch with comprehensive service and support programs, including system design, service deployment, technical support and network maintenance. World-class service plans and a global network of flexible and responsive support professionals help ensure your ability to deliver outstanding “anytime, anywhere, any-device” customer experiences.



Amethyst III Application Example

SPECIFICATIONS

TS OVER ASI SWITCH

Up to four 2:1 TS over ASI switching functions
Up to eight ASI inputs
Up to eight ASI outputs: four smart secured outputs, four smart outputs
Smart bypass on ASI outputs to preserve user-selected TS inputs or last switch position
Byte or packet mode automatic detection
Configurable ASI outputs for monitoring purpose

TS OVER IP SWITCH

Up to eight 2:1 TS over IP switching functions
Four GbE 100/1000Base-T ports (twisted pair, RJ45)
Configurable bypass on GbE ports (link down mode pass-through mode)
IPv4
UDP/RTP or UDP encapsulation
Multicast
IGMPv2/v3
VLAN
SMPTE 2022 FEC correction on input or generation on output
TS over IP output duplication (up to four per switching function)

SPECIFICATIONS

DELAY COMPENSATION

- Available on ASI and IP switches (up to several seconds)
- TS seamless switching for identical TS (network redundancy)
- DVB-T/SFN seamless switching (mega-frame) from NetProcessor (SFN adapter)
- DVB-T2/SFN seamless switching (T2-MI) with NetProcessor (T2-MI gateway)

SWITCHING CONDITIONS

- Full real-time monitoring of all incoming transport streams
- TR 101 290 Priority 1/2/3 analysis
- Advanced tests: PID max/min bitrate, stuffing max/min bitrate, service presence, scrambling PIDs, DVB-T MIP checking, DVB-T2 T2-MI packet checking

SWITCHING STRATEGIES

- Automatic switch supporting TS input priority (Main/Spare mode)
- Automatic switch on TS input upon failure (Redundancy mode)
- Manual switch

CONTROL & SUPERVISION

- Web GUI for remote control
- SNMP v2 agent for NMS
- Six GPI inputs
- Four contact closure outputs

PHYSICAL

Dimensions (H x W x D)	1.7 in x 17.5 in x 19.8 in (1 RU) 4.3 cm x 44.5 cm x 50.2 cm
Weight	13.8 lbs/6.3 kg
Power Supplies	Dual
Input Voltage	100-240 VAC
Input Frequency	50-60 Hz
Power Consumption	Up to 80 W

ENVIRONMENTAL

Operating Temperature	41° to 104° F 5° to 40° C
Storage Temperature	-13° to 158° F -25° to 70° C
Operating Humidity	< 95% non-condensing
Electromagnetic Compliance	EN55032 EN55024 EN61000-3-2 FCC, VCCI, ICES
Safety	IEC 60950 EN60950 UL60950 CSA C22.2 N°60950
CE	Low Voltage Directive 2006/95/EC EMC Directive 2004/108/EC ROHS Directive 2011/65/UE

ORDERING INFORMATION

BASE SYSTEM

Part Number	Description
AMETH3-1U-2AC-FULL	1-RU chassis with full front panel (LEDs, LCD, keypad), dual power supply, GPI, contact closure
AMETH3-1U-2AC-LITE	1-RU chassis with light front panel (LEDs), dual power supply, GPI, contact closure

INTERFACE OPTIONS

Part Number	Description
AMETH3-HW-ASI-4-1ST	Four ASI inputs + four ASI outputs, bypass, required for single/dual/triple/quad ASI switch
AMETH3-HW-ASI-4-2ND	Four ASI inputs + four ASI outputs, bypass, required for triple/quad ASI switch
AMETH3-HW-GIGE-4	Four GbE/RJ45 bidirectional ports, bypass, required for TS over IP switch
AMETH3-HW-GIGE-4-FEC	Four GbE/RJ45 bidirectional ports, bypass, FEC correction or FEC generation, required for TS over IP switch

SOFTWARE OPTIONS

Part Number	Description
AMETH3-SW-DVB	DVB software version
AMETH3-SW-DVBT2	DVB-T/T2 software version
AMETH3-SW-ATSC	ATSC software version

SWITCHING LICENSES

One license required per switching function (e.g., three licenses required for triple ASI or TS over IP switch)

Part Number	Description
AMETH3-LIC-SWITCH-STD	2:1 TS switching license, standard monitoring including TR 101 290 Priority 1
AMETH3-LIC-SWITCH-ADV	2:1 TS switching license, advanced monitoring including TR 101 290 Priority 1/2/3 and advanced tests