BROADCAST NETWORK EQUIPMENT
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THE COMPANY

ENENSYS Technologies designs and manufactures innovative professional equipment for Broadcast Network, Digital TV, Test & Monitoring core markets.

ENENSYS’ team is composed of highly experienced engineers, gathering a broad technology base such as hardware design, RF, signal processing and software. ENENSYS’ corporate culture is rooted on strong human values such as anticipation, creativity, empathy and reactivity to be ahead of your needs and achieve customer care excellence.

ENENSYS is the world leader for DVB-T2 technology, and covers other standards such as DVB-T, DVB-H, T-DMB, DTMB... around 2 products lines:
- **Broadcast Network Equipment** for Digital Terrestrial TV, Mobile TV and IP Distribution, ...
- **Test & Monitoring Equipment** for Network operator lab, Digital TV R&D, Equipment manufacturers,

Serial Inventors

ENENSYS’ culture is based on innovation. ENENSYS is working since its creation on novelty products and solutions based on latest technologies and standards. ENENSYS team participates to the major standardization working groups, with a special focus on DVB.

ENENSYS has more than 15 patents, all dedicated to the broadcast industry. Link to this innovation work, ENENSYS is proud to be the first to introduce new technologies and solutions to support customer in their network improvements and deployments.

All products are fully developed by ENENSYS team; hardware, firmware, software, ... providing the complete knowledge and flexibility to our team to answer complex tenders, to provide new features according to customer requests and to imagine new solutions.
ENENSYS Market and solutions

Working in the digital television broadcasting, ENENSYS is specialized in delivering products and solutions for:

- **DIGITAL TERRESTRIAL TV**
  - Focusing on DVB-T and DVB-T2, ENENSYS offers deep knowledge of these standards, including the Single Frequency Network management.
  - Offering reliable architecture to ensure no interruption of the services, even in case of equipment failure or network failure.
  - Managing complex architecture for Local and Regional service insertion in a global DTTV network.

- **DISTRIBUTION AND CONTRIBUTION NETWORK**
  - Providing a delivery network optimization by combining on the same distribution link DTH, DVB-T and DVB-T2 services.
  - Offering reliable solution to deliver content over IP by supporting advance feature like FEC, network jitter removal, and seamless redundancy mechanisms.

- **RELIABLE DIGITAL TV DELIVERY**
  - Providing all necessary tools to ensure reliable and secure SFN distribution from head end to transmitter sites.
  - Featuring SFN seamless switch over at equipment and network level even when using IP based architecture.
  - Preventing network and transmitters from desynchronization and black out.

- **MOBILE TV**
  - Using Broadcast and Cellular technology.
  - Working on the latest standard and architecture like T2Lite, NGH and LTE.

- **DIGITAL TV TEST & MONITORING**
  - Providing a full range of devices for realtime analysis, recording and signal generation.
  - Offering 24/7 monitoring device for transmitter sites supervision.

ENENSYS Network Product portfolio

ENENSYS solutions are based on products fully imagined and developed by ENENSYS, from the hardware design to the embedded software and Graphical User Interface. These broadcast grade products are deployed in many commercial services supporting a high level of availability.

ENENSYS offers a large product portfolio divided in the 3 following categories:

- **AlterNet: The Digital TV Network Adapters**
  - Delivery Network adaptation for DTTV, MobileTV, Digital Radio…
  - DVB-T2 gateway, SFN management and delivery over IP.

- **SafeGuard: The Reliable Broadcasting Solution**
  - Reliable and secure solution at equipment and network level.
  - ASI and IP Head End seamless redundancy architecture and delivery paths synchronization.

- **UltimEdge: the Transmitter site innovative Adapters and Solutions**
  - Local service insertion and replacement.
  - Network optimization using IP delivery and joined DTH/DTTV network.
ENENSYS offers a unique and complete end-to-end DVB-T SFN solution for reliable and secure SFN distribution from the head-end to the transmission sites.

**KEY BENEFITS**
- High-grade broadcast equipment
- Complete range of SFN products
- No more black screen
- Uninterrupted service guaranteed
- Flexible solution based on standards

**KEY FEATURES**
- SFN Seamless switch-over between redundant SFN Adapters
- Seamless changeover between two identical MPEG-2 streams but delayed
- Unique SFN preservation when distributing over IP networks
- Video over IP distribution for OPEX reduction
- 24/7 monitoring of the network and system

**PRODUCTS**

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<th>Description</th>
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<td>SFNguard SFN seamless solution for SFN Adapter</td>
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<td>3</td>
<td>ASI Guard II Seamless ASI Switch</td>
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<td>GigaCaster II Multiple Distribution over IP</td>
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<td>5</td>
<td>SynFoNizer SFN redundant network paths synchronizer</td>
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<td>6</td>
<td>NetMod II DTTV SFN Modulators/Exciters</td>
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<td>7</td>
<td>EdgeProbe Network Monitoring probe</td>
<td>See more on <a href="http://www.enensystest.com">www.enensystest.com</a></td>
</tr>
<tr>
<td>8</td>
<td>ReFeree DVB-T/T2 RF analyzer</td>
<td>See more on <a href="http://www.enensystest.com">www.enensystest.com</a></td>
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</tbody>
</table>
UNIQUE END-TO-END SOLUTION FOR EFFICIENT DVB-T2 BROADCASTING
MOST ADVANCED DVB-T2 SOLUTION ON THE MARKET
COMMERCIAL ROLL-OUT IN LARGEST DVB-T2 NETWORKS

ENENSYS provides an end-to-end DVB-T2 solution that handles the complexity of the standard and provides best of breed DVB-T2 solution on the market!

KEY BENEFITS
• Field proven and interoperable solution
• Flexible and scalable architectures
• One-stop-shop solution
• Secured investment in DVB-T2 system
• Simplified T2 network administration

KEY FEATURES
• Full support of DVB-T2 standard
• Uninterrupted service guaranteed
• DVB-T2 regional broadcasting with SFN preservation
• Simplified redundancy of T2-MI distribution
• Compliant with full IP architecture

PRODUCTS
1. NN6-T2Gateway
2. T2Guard
3. ASIGuard II
4. IPGuard E2
5. T2Edge II
6. Netmod II DTTV
7. Invert5
8. DiviDual T2-MI
9. ReFeree-T2
10. EdgeProbe

See more on www.enensystest.com

DVB-T2 Gateway
DVB-T2 Gateway
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DVB-T2 Gateway
DVB-T2 Gateway
DVB-T2 Gateway
DVB-T2 Gateway
DVB-T2 Gateway
DVB-T2 Gateway
DVB-T2 Gateway

Seamless switch-over for T2 Gateway
Seamless ASI switch
Seamless IP switch
DVB-T2 Local inserter
DVB-T2 broadcast modulator
T2-MI de-encapsulator
T2-MI Analyzer
DVB-T2 RF Analyzer
DVB-T2 Network Monitoring Probe
CONTENT OVER IP

SOLUTION

RELIABLE VIDEO AND RADIO CONTENT DISTRIBUTION OVER IP NETWORKS
SFN NETWORK PRESERVATION IN ANY CASE
EASY TO SETUP AND MORE COST EFFECTIVE THAN TRADITIONAL SOLUTIONS

High density and versatile Video/Audio over IP gateway

KEY BENEFITS

• SFN Network preservation using dedicated regulation
• Supporting both directions simultaneously
• Streams and devices redundancy management
• Dense solution for high number of managed streams
• Support all MPEG TS and DAB standard based
  (DVB T/T2/C/S/H, DTMB, ISDB-T, ATSC, DAB, DAB+, DMB, T-DMB)

KEY FEATURES

• PRO MPEG Forum Cop3 support (FEC included)
• Compliant with WorldDMB EDI/DCP standard
• Advanced network jitter removal (network jitter agnostic)
• SFN preservation with or without external clock reference
• Support of multi-Unicast and Multicast delivery

PRODUCTS

1 GigaCaster DMB  ETI over IP Gateway  | P. 22
2 GigaCaster II Multiple Distribution over IP | P. 23
3 IPGuard  Seamless IP switch  | P. 30
4 Netmod II DTTV  DVB-T/T2 exciter/modulator  | P. 37
DIGITAL TV RELIABILITY SOLUTION

SEAMLESS REDUNDANCY OVER SFN NETWORKS
UNINTERRUPTED SERVICE GUARANTEED
COMPLIANT WITH FULL IP ARCHITECTURE

KEY BENEFITS
• No Single Point of Failure
• Seamless distribution network redundancy management
• Field proven and interoperable solution
• Flexible and scalable architectures
• No more TV black screen

KEY FEATURES
• Broadcast-grade products
• Eased installation and maintenance
• Easy redundancy configuration
• Seamless changeover between two delayed streams
• Full SNMP support

PRODUCTS
1. NN6-MIP – High-grade SFN Adapter | P. 25
2. SFNguard – SFN seamless solution for SFN Adapters | P. 25
3. NN6-T2Gateway – DVB-T2 Gateway | P. 19
4. T2Guard – Seamless switch-over for T2 Gateway | P. 19
5. ASIguard II – Seamless ASI switch | P. 29
6. IPGuard – Seamless IP switch | P. 30
7. SafeSplitter – Advanced ASI splitter | P. 28
8. GigaCaster II – Multiple Distribution over IP | P. 23
9. DistriGuard – Automatic ASI to IP gateway redundancy | P. 23
10. SynFoNizer – SFN redundant network paths synchronizer | P. 32
11. Netmod II DTTV – DVB-T/T2 broadcast modulator | P. 37

The Ultimate solution for network reliability!
The ENENSYS Mobile TV solution is the unique solution to enable Mobile TV experience whatever the network delivery.

**MOBILE TV SOLUTION**

**MOBILE TV BROADCASTING THROUGH T2 LITE**

**MOBILE TV BROADCASTING THROUGH LTE/MBMS (LTE BROADCAST)**

**BROADCAST GRADE PRODUCT WITH FULL REDUNDANCY SUPPORT**

**KEY FEATURES**

- Mobile TV broadcasting over T2 Lite
- Mobile TV broadcasting over LTE/eMBMS
- SFN broadcasting over T2Lite and LTE
- Integrated with infrastructure vendors

**KEY BENEFITS**

- Multi-standard solution
- Target Portable and Mobile handsets receivers
- Broadcast grade and future proof solution
- Full redundancy schemes
- Easy integration with any NMS and Service Platform

**PRODUCTS**

| 1 | MobiStream | BM-SC and/or MBMS GW User Plane | P. 26 |
| 2 | NN6-T2 Gateway | DVB-T2 Gateway | P. 19 |
| 3 | NetMod II DTTV | DVB-T2/T2-Lite broadcast modulator | P. 37 |
| 4 | T2Edge II | DVB-T2 Local inserter | P. 35 |
DIGITAL TERRESTRIAL TV CONTENT REGIONALIZATION SOLUTION

Deterministic Local TV insertion to enable SFN broadcasting
Reduce OPEX cost by delivering only once shared content
Commercially roll-out in largest networks

Enabling content regionalization over SFN networks

Key Benefits

• Enable local content insertion over DVB-T2 SFN networks
• Field proven and interoperable solution
• Flexible and scalable architectures
• Spectrum efficiency optimization
• Future proof solution

Key Features

• Distribution network bandwidth optimization
• Full support of DVB-T2 standard
• Uninterrupted service guaranteed
• Regional broadcasting with SFN preservation
• Eased installation and maintenance

Products

1. NN6-T2 Gateway
2. T2Edge II
3. NetMod II DTTV

NATIONAL HEAD-END

REGIONAL #1 HEAD-END

REGIONAL #2 HEAD-END

TRANSMITTER #1 - REGION #1

TRANSMITTER #2 - REGION #1

TRANSMITTER #1 - REGION #2

PRODUCTS

1. NN6-T2 Gateway
2. T2Edge II
3. NetMod II DTTV

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P. 37
DTTV WITH DTH CO-EXISTENCE SOLUTION FOR DVB-T

INNOVATIVE END-TO-END SOLUTION FOR DTH AND DTT SERVICES
SHARE SATELLITE CAPACITY BETWEEN DVB-T SFN and DTH
NO PROPRIETARY INFORMATION DELIVERED

Reduce OPEX cost by delivering content once

**KEY BENEFITS**
- No duplication of content over satellite network (no dual illumination)
- No proprietary information
- DTH compliant stream
- Transmitter and DVB-T receiver agnostic

**KEY FEATURES**
- SFN broadcasting compliant
- No modification of A/V services
- Independence from content format (SD/HD/4K, MPEG2/H264, …)
- PSI/SI update to reflect new services
- Service selection for DTTV network

**PRODUCTS**

<p>| | |</p>
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<th></th>
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<tbody>
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<td>NN6-MIP</td>
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<td>2</td>
<td>TxGateway</td>
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<td>3</td>
<td>TxEdge</td>
</tr>
<tr>
<td>4</td>
<td>NetMod II DTTV</td>
</tr>
</tbody>
</table>
DTTV WITH DTH CO-EXISTENCE SOLUTION FOR DVB-T2

UNIQUE END-TO-END SOLUTION TO MUTUALIZE DTH AND DTT SERVICES COMMERCIALLY ROLLED-OUT IN LARGEST DVB-T2 NETWORKS BACK-UP DVB-T2 TRANSMISSION SITES WITH DTH STREAM

Share satellite capacity for DVB-T2 distribution and DTH services

KEY BENEFITS

• No duplication of content over satellite network
• Regionalization management compatible
• DVB-T2 transmitter and receiver agnostic

KEY FEATURES

• SFN broadcasting compliant
• No modification of A/V services
• Single PLP and Multiple PLP support
• Independency from content format (SD/HD/4K, MPEG2/H264, …)
• PSI/SI update to reflect new services
• Service selection for DTTV network

PRODUCTS

1. **NN6-T2 Gateway**
   - DVB-T2 DTH Gateway
   - P. 19

2. **ASIGuard II**
   - Seamless ASI switch
   - P. 29

3. **T2Edge DTH**
   - DTH to DVB-T2 Local adapter
   - P. 36

4. **Netmod II DTTV**
   - DVB-T2 broadcast modulator
   - P. 37
ALTERNET PRODUCTS

- InverTS DVB-T2 Gateway
- NN6_T2Gateway DVB-T2 Gateway (T2 and T2-lite)
- TxGateway DVB-T Gateway for DTH
- T2GatewayDTH DVB-T2 Gateway for DTH
- GigaCaster DMB DAB, DAB+, DMB, ETI over IP Gateway
- GigaCaster II TS over IP Gateway
- MatchX DVB-ATSC MPEG2 interface
- NN6-MIP / NN6-SIP SFN Adapter
- MobiStream eMBMS Gateway for LTE broadcasting
**InverTS** DVB-T2 Gateway

**KEY BENEFITS**
- Reuse DVB legacy tools with MPEG-2 TS input
- Support MPLP services
- Bandwidth optimization of network distribution
- Built-in or external analysis of T2-MI content
- Straight integration within any NMS

**TECHNICAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Inputs / outputs</th>
<th>Feature</th>
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<tbody>
<tr>
<td>2x Fast Ethernet control ports (only one used)</td>
<td>De-encapsulation of TS into DVB-T2 Stream</td>
</tr>
<tr>
<td>2x Gigabit Ethernet data ports (only one used)</td>
<td></td>
</tr>
<tr>
<td>6x ASI MPEG-2 TS Outputs</td>
<td></td>
</tr>
<tr>
<td>2x ASI T2-MI/MPEG-2 TS redundant Inputs</td>
<td></td>
</tr>
<tr>
<td>Dry relays output</td>
<td></td>
</tr>
<tr>
<td>T2-MI de-encapsulation</td>
<td></td>
</tr>
<tr>
<td>Fetch and output one or several TS from T2-MI input</td>
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<tr>
<td>Single and Multiple PLP management</td>
<td></td>
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<tr>
<td>T2-MI analysis</td>
<td></td>
</tr>
<tr>
<td>Multiple TS output over ASI and IP</td>
<td></td>
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<tr>
<td>Advanced statistics and PLP supervision</td>
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</tbody>
</table>

**APPLICATIONS**
- Re-multiplexing with other TS sources
- Simulcasting over different networks
- Video and TS monitoring
- TS processing (splicing, logo insertion, ...)
- Reusing Analog transmitters
- T2-MI analysis

**ORDERING CODES**

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<thead>
<tr>
<th>InverTS Options</th>
<th>Description</th>
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<td>Management of 2 PLP</td>
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<td>InverTS-MPLP-4</td>
<td>Management of 4 PLP</td>
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<tr>
<td>InverTS-MPLP-8</td>
<td>Management of 8 PLP</td>
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<tr>
<td>InverTS-IP</td>
<td>IP input and output management</td>
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<tr>
<td>InverTS-AdvMonitoring</td>
<td>Advanced statistics and monitoring</td>
</tr>
<tr>
<td>NN6-In48V</td>
<td>48 V input instead of 110V/220V</td>
</tr>
<tr>
<td>NN6-In220V-Redundant</td>
<td>110/220V redundant power supply</td>
</tr>
<tr>
<td>NN6-In48V-Redundant</td>
<td>48V redundant power supply</td>
</tr>
</tbody>
</table>
NN6_T2Gateway  DVB-T2 Gateway (T2 and T2-lite)

**TECHNICAL CHARACTERISTICS**

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</tr>
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<td>2x Gigabit Ethernet data ports (only one used)</td>
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</tr>
<tr>
<td>6x ASI MPEG-2 TS inputs</td>
<td></td>
</tr>
<tr>
<td>2x Mirrored ASI T2-MI/MPEG-2 TS outputs</td>
<td></td>
</tr>
<tr>
<td>1x PPS and 1x 10 MHz inputs</td>
<td></td>
</tr>
<tr>
<td>1x PPS and 1x 10 MHz outputs</td>
<td></td>
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<tr>
<td>1x TNC input for built-in GPS (option)</td>
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<tr>
<td>Dry relays output</td>
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<table>
<thead>
<tr>
<th>Featuring</th>
<th>Description</th>
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<tr>
<td>T2-base and T2-lite support (T2 version 1.1.1, 1.2.1, 1.3.1)</td>
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<tr>
<td>SFN adaption with MISO support and T2-MIP packet generation</td>
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<tr>
<td>Single and Multiple PLP management</td>
<td></td>
</tr>
<tr>
<td>Multiple PLP type 1 and type2 support</td>
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<tr>
<td>L1 post scrambling support</td>
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<tr>
<td>Static and Dynamic PLP allocation</td>
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<tr>
<td>Individual addressing and FEF management</td>
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<tr>
<td>T2-MI output over ASI and IP with optimized bandwidth</td>
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<tr>
<td>IP output featuring ProMPEG CoP#3</td>
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<tr>
<td>T2Guard: patented 1+1 seamless change-over in SFN and MFN</td>
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<tr>
<td>Validation of DVB-T2 parameters</td>
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<tr>
<td>Dynamic supervision of PLP allocation</td>
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</tr>
</tbody>
</table>

**APPLICATIONS**

- DVB-T2 SFN/MISO network build-up
- DVB-T2 Multi-PLP management
- DVB-T2 regionalization
- DVB-T2 mobile broadcasting

**KEY BENEFITS**

- Central body of the DVB-T2 network
- Improve coverage when broadcasting over SFN
- Avoid TV black-out during 1+1 redundancy
- Seamless 1+1 redundancy (T2Guard patented technology)
- Interoperability proven with major DVB-T2 transmitters
- T2-lite broadcasting for mobile reception

**ORDERING CODES**

| NN6-T2Gateway | Encapsulation of MPEG-2 TS into DVB-T2 Stream |

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<tr>
<th>Options</th>
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<tbody>
<tr>
<td>Multi-PLP-2</td>
<td>Management of 2 PLP</td>
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<tr>
<td>Multi-PLP-4</td>
<td>Management of 4 PLP</td>
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<tr>
<td>Multi-PLP-8</td>
<td>Management of 8 PLP</td>
</tr>
<tr>
<td>T2Gateway-IP</td>
<td>Up to 8 TS IP input</td>
</tr>
<tr>
<td>T2Guard</td>
<td>1+1 seamless redundancy</td>
</tr>
<tr>
<td>T2Gateway-DTH</td>
<td>Firmware upgrade for combining DTH and T2 services</td>
</tr>
<tr>
<td>NN6-GPSv2</td>
<td>Built-in GPS</td>
</tr>
<tr>
<td>NN6-In48V</td>
<td>48 V input instead of 110V/220V</td>
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<td>48V redundant power supply</td>
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</tbody>
</table>
**TxGateway**  
*DVB-T Gateway for DTH*

**Applications**
- Unique end-to-end solution to mutualize DTH and DTT services
- Backup DVB-T transmission sites with DTH stream
- Regionalization support

**Key Benefits**
- Reduce OPEX cost by delivering content once
- No proprietary information
- DTH compliant stream

**Technical Characteristics**

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<td>2x Gigabit Ethernet data ports for IP input and IP output</td>
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<td>2x ASI MPEG-2 TS inputs</td>
</tr>
<tr>
<td>2x Mirrored ASI MPEG-2 TS outputs</td>
</tr>
<tr>
<td>1x RS232 to enable 1+1 seamless redundancy</td>
</tr>
<tr>
<td>Dry relays output</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Featuring</th>
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</thead>
<tbody>
<tr>
<td>Insert a reference service into a DTT stream carrying MIP packet</td>
</tr>
<tr>
<td>Feed a DTH Multiplexer with the whole DTT stream or only the reference service</td>
</tr>
<tr>
<td>SFN broadcasting support</td>
</tr>
<tr>
<td>IP output featuring ProMPEG CoP#3</td>
</tr>
<tr>
<td>SynchroGuard: 1+1 seamless change-over between two TxGateways</td>
</tr>
</tbody>
</table>

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<td><strong>TxGateway</strong>-IP</td>
<td>IP input and IP output support</td>
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<tr>
<td><strong>NN6-In48V-Redundant</strong></td>
<td>48V redundant power supply</td>
</tr>
</tbody>
</table>
**T2GatewayDTH** DVB-T2 Gateway for DTH

**TECHNICAL CHARACTERISTICS**

Inputs / outputs
- 2x Gigabit Ethernet control ports (only one used)
- 2x Gigabit Ethernet data ports for IP input and IP output
- 2x ASI MPEG-2 TS inputs
- 2x Mirrored ASI MPEG-2 TS outputs
- 1x RS232 to enable 1+1 seamless redundancy
- Dry relays output

Featuring
- Insert T2-MI markers into a DTH stream
- No bit rate modification
- In-band signaling to fully control remote T2EdgeDTH
- Single and Multiple PLP management
- Validation of T2 parameters
- SFN/MISO broadcasting support
- Regionalization management capable
- IP input and IP output featuring ProMPEG CoP#3

**APPLICATIONS**

- Unique end-to-end solution to mutualize DTH and DTT services
- Backup DVB-T2 transmission sites with DTH stream
- Regionalization support

**KEY BENEFITS**

- Reduce OPEX cost by delivering content once
- DTH compliant stream
- Commercially rolled-out in largest DVB-T2 network

**ORDERING CODES**

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2GatewayDTH-IP</td>
<td>IP input and IP output support</td>
</tr>
<tr>
<td>NN6-In48V</td>
<td>48V input instead of 110V/220V</td>
</tr>
<tr>
<td>NN6-In220V-Redundant</td>
<td>110/220V redundant power supply</td>
</tr>
<tr>
<td>NN6-In48V-Redundant</td>
<td>48V redundant power supply</td>
</tr>
</tbody>
</table>
**GigaCaster DMB** DAB, DAB+, DMB ETI over IP Gateway

### TECHNICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Inputs / outputs</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2x Fast Ethernet control ports (only one used)</td>
<td></td>
</tr>
<tr>
<td>2x Gigabit Ethernet data ports (only one used)</td>
<td></td>
</tr>
<tr>
<td>4x ETI inputs or outputs</td>
<td></td>
</tr>
<tr>
<td>4x optional redundant ETI outputs or ETI inputs monitoring</td>
<td></td>
</tr>
<tr>
<td>Dry relays output</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Featuring</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDI support</td>
</tr>
<tr>
<td>Up to 4 simultaneous streams management</td>
</tr>
<tr>
<td>Stuffing removal</td>
</tr>
<tr>
<td>Forward Error Correction (DCP)</td>
</tr>
<tr>
<td>Advanced network jittering removal</td>
</tr>
<tr>
<td>SFN preservation</td>
</tr>
<tr>
<td>Unicast or multicast delivery</td>
</tr>
<tr>
<td>RTP/UDP, IGMP support</td>
</tr>
</tbody>
</table>

### APPLICATIONS
- Radio IP Distribution to transmitters
- Radio IP Contribution (point to point)

### KEY BENEFITS
- Reduce bandwidth (stuffing removal)
- No external reference clock (10 MHz, 1 PPS) needed
- Network Jittering removal
- SFN preservation

### ORDERING CODES

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NN6-ETI-Redundant</td>
<td>Redundant ETI output or ETI input monitoring</td>
</tr>
<tr>
<td>NN6-ETI-Monitoring</td>
<td>Advanced ETI to IP monitoring</td>
</tr>
<tr>
<td>NN6-In48V</td>
<td>48V input instead of 110V/220V</td>
</tr>
<tr>
<td>NN6-In220V-Redundant</td>
<td>110/220V redundant power supply</td>
</tr>
<tr>
<td>NN6-In48V-Redundant</td>
<td>48V redundant power supply</td>
</tr>
</tbody>
</table>
GigaCaster II TS over IP Gateway

**TECHNICAL CHARACTERISTICS**

**Inputs / outputs**
- 2x Gigabit Ethernet control ports (only one used)
- 2x Gigabit Ethernet data ports
- Up to 8x ASI MPEG-2 TS inputs/outputs
- Optional SFP port for Fiber optic distribution
- 1x 10 MHz input
- Dry relays output

**Featuring**
- RTP / UDP support
- Unicast and multicast support
- DVB-ASI FEC compliant
- Pro MPEG Forum CoP#3 / SMPTE 2022
- Network jittering removal
- Unique patented SFN preservation with or without 10MHz
- Outstanding packet loss recovery mechanism to maintain SFN
- Bidirectional DVB-ASI ports
- 1+1 automatic redundancy of GigaCaster (DistriGuard option)
- 1+1 automatic redundancy of IP streams (DualIP option)
- IGMP v2/v3 support

**APPLICATIONS**
- TS over IP distribution
- TS over IP contribution
- IP transmission to DTTV transmitters

**KEY BENEFITS**
- Bidirectional ASI ports : ASI>IP or IP>ASI per TS
- Multi-standard : DVB-T2/T, ISDB-T, ATSC
- Video agnostic : MPEG-2 or MPEG-4/H.264
- Scalable : From 1 ASI port up to 8 ASI ports
- Unique patented SFN preservation
- Automatic 1+1 redundancy of units and IP Streams

**ORDERING CODES**

<table>
<thead>
<tr>
<th>GigaCaster II-ASI1</th>
<th>shipped with 4 ASI ports and 1 activated DVB-ASI I/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>GigaCaster II-ASI2</td>
<td>shipped with 4 ASI ports and 2 activated DVB-ASI I/O</td>
</tr>
<tr>
<td>GigaCaster II-ASI4</td>
<td>shipped with 4 ASI ports and 4 activated DVB-ASI I/O</td>
</tr>
<tr>
<td>GigaCaster II-ASI8</td>
<td>shipped with 8 ASI ports and 8 activated DVB-ASI I/O</td>
</tr>
</tbody>
</table>

**Options**
- **DistriGuard**
  - Automatic 1+1 redundancy option between two GigaCaster II
- **DualIP**
  - Redundancy of IP streams option
- **NN6-SFP**
  - Dual SFP slot option. SFP module not provided
- **NN6-ASI1-2**
  - Upgrade from 1 port to 2 ports
- **NN6-ASI1-4**
  - Upgrade from 1 port to 4 ports
- **NN6-ASI2-4**
  - Upgrade from 2 ports to 4 ports
- **NN6-ASI_Board**
  - Pre-equipment of GigaCaster II to support 4 additional ASI ports
- **NN6-ASI4-8**
  - Upgrade from 4 ports to 8 ports – should be pre-equipped with one NN6-ASI_Board
- **NN6-In48V**
  - 48 V input instead of 110V/220V
- **NN6-In220V-Redundant**
  - 110/220V redundant power supply
- **NN6-In48V-Redundant**
  - 48V redundant power supply
### MatchX DVB-ATSC MPEG2 Interface

#### TECHNICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Inputs / outputs</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASI&gt;SPI (NN6-1130)</td>
<td>1x DVB-ASI input, 1x DVB-SPI LVDS output, 1x DVB-SPI TTL output</td>
</tr>
<tr>
<td>ASI&gt;SMPTE (NN6-1113)</td>
<td>1x DVB-ASI input, 2x SMPTE 310M outputs</td>
</tr>
<tr>
<td>SPI&gt;ASI (NN6-3011)</td>
<td>1x DVB-SPI LVDS input, 1x DVB-SPI TTL input, 2x DVB-ASI outputs</td>
</tr>
<tr>
<td>SMPTE&gt;ASI (NN6-1311)</td>
<td>1x SMPTE 310M input, 2x DVB-ASI outputs</td>
</tr>
</tbody>
</table>

#### Applications
- Connect ASI equipment to ATSC transmitters
- Connect old modulators (LVDS, etc.) to new encoders and Mux (ASI)
- Connect ASI equipment to chipsets or boards at LVTTL or LVDS levels

#### Key Benefits
- Compact, robust and standalone
- Built-in HTTP and SNMP servers for facilitated integration

#### Ordering Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NN6-1130</td>
<td>ASI to LVDS/TTL converter</td>
</tr>
<tr>
<td>NN6-1113</td>
<td>ASI to SMPTE 310M converter</td>
</tr>
<tr>
<td>NN6-1113 SFN</td>
<td>ASI to SMPTE 310M converter – SFN compliant</td>
</tr>
<tr>
<td>NN6-3011</td>
<td>LDS/TTL to ASI converter</td>
</tr>
<tr>
<td>NN6-1311</td>
<td>SMPTE 310M to ASI converter</td>
</tr>
<tr>
<td>NN6-1311 SFN</td>
<td>SMPTE 310M to ASI converter – SFN compliant</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NN6-PSEU</td>
<td>Power supply (EU plug)</td>
</tr>
<tr>
<td>NN6-PSUK</td>
<td>Power supply (UK plug)</td>
</tr>
<tr>
<td>NN6-PSUS</td>
<td>Power supply (US plug)</td>
</tr>
<tr>
<td>NN6-RCKM</td>
<td>Rack mount host</td>
</tr>
</tbody>
</table>
NN6-MIP / NN6-SIP SFN Adapter

KEY BENEFITS
- Versatile SFN Adapter (DVB and DTMB capable)
- Avoid TV black-out during switch-over
- Unique and patented SFN seamless switch-over (SFNguard)
- RF coverage refinement
- Proven interoperability with transmitters

APPLICATIONS
- SFN Adaptation for:
  - DVB-T/H broadcasting (NN6-MIP)
  - DTMFB broadcasting (NN6-SIP)

TECHNICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Inputs / outputs</th>
<th>1x Fast Ethernet control ports</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1x Fast Ethernet data port (not used)</td>
</tr>
<tr>
<td></td>
<td>2x ASI MPEG-2 TS redundant inputs</td>
</tr>
<tr>
<td></td>
<td>2x ASI MPEG-2 TS mirrored outputs</td>
</tr>
<tr>
<td></td>
<td>1x PPS and 1x 10 MHz inputs</td>
</tr>
<tr>
<td></td>
<td>Dry relays output</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Featuring</th>
<th>MegaFrame Initialization Packet (MIP) insertion according to TS 101 191 (only with NN6-MIP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Second Frame Initialization Packet (SIP) insertion according to GB20600-2006 (only with NN6-SIP)</td>
</tr>
<tr>
<td></td>
<td>All optional functions: up to 128 transmitters at the same time</td>
</tr>
<tr>
<td></td>
<td>PCR restamping and bitrate adaptation</td>
</tr>
<tr>
<td></td>
<td>Several automatic redundancy levels (inputs, outputs, 1+1 seamless SFN adapter change-over)</td>
</tr>
<tr>
<td></td>
<td>Seamless SFN switch-over upon input or 10 MHz loss</td>
</tr>
<tr>
<td></td>
<td>Easy-to-use web based GUI</td>
</tr>
<tr>
<td></td>
<td>Full SNMP V2 support</td>
</tr>
</tbody>
</table>

ORDERING CODES

| NN6-MIP DVB | SFN Adapter / MIP Inserter for DVB-T and DVB-H networks |
| NN6-SIP DTMB | DTMFB SFN Adapter / SIP Inserter for Chinese DTTV networks (GB20600-2006) |

Options
- NN6-SFNguard 1+1 seamless redundancy for MIP inserters (only for NN6-MIP DVB)
- NN6-MIP-MULTI Multi-standard (DVB and DTMB) option for SFN Adapter
MobiStream eMBMS Gateway for LTE broadcasting

KEY BENEFITS
- On-demand broadcasting over LTE networks
- Standard-based solution (eMBMS)
- LTE network bandwidth optimization
- Improve coverage when broadcasting over MBSFN
- Proven interoperability with infrastructure vendors

APPLICATIONS
- MobileTV broadcasting
- News, VOD, Ads filecasting
- Firmware updates
- Emergency alert

TECHNICAL CHARACTERISTICS

Inputs / outputs
- 2x Gigabit Ethernet control ports
- 2x Gigabit Ethernet data ports
- 4x Gigabit Ethernet data ports (not used)
- 1x RS232 interface for 1+1 unit redundancy (not used)
- 1x TNC input for built-in GPS (option)
- Dry relays outputs

Featuring
- Central body of the MBMS over LTE broadcasting
- Highly reliable with several redundancy schemes
- MBMS Gateway and/or BM-SC functions
- Encapsulate IP traffic into GTP-U over M1 interface
- SYNC data generation for MBSFN broadcasting
- Built-in GPS receiver for accurate SFN broadcasting
- eMBMS bearers management through webServices
- IP remapping for regionalization support
- IPv4 and IPv6 support for data input/output
- VLAN support
- Automatic 1+1 redundancy of the unit
- Automatic 1+1 redundancy of the Ethernet ports
- Easy-to-use web based GUI
- Full SNMP V2 support

ORDERING CODES

<table>
<thead>
<tr>
<th>MobiStream-Pilot</th>
<th>Management of up to 10 bearers – No redundancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>MobiStream-Base</td>
<td>Management of up to 50 bearers</td>
</tr>
<tr>
<td>MobiStream-RO</td>
<td>Management of up to 100 bearers</td>
</tr>
<tr>
<td>MobiStream-XRO</td>
<td>Management of up to 250 bearers</td>
</tr>
</tbody>
</table>

Options
- MobiStream-PtoB: Add 40 MBMS bearers to MobiStream-Pilot, redundancy support
- MobiStream-BtoRO: Add 50 MBMS bearers to MobiStream-Base
- MobiStream-ROtoXRO: Add 150 MBMS Bearers to MobiStream-RO
- NN6-GPSv2: Built-in GPS for MBSFN broadcasting
- NN6-In48V: 48V input instead of 110V/220V
- NN6-In220V-Redundant: 110/220V redundant power supply
- NN6-In48V-Redundant: 48V redundant power supply
SAFEGUARD PRODUCTS

SafeSplitter Dual 1:3 ASI Splitter with TS monitoring
ASIGuardII Seamless ASI switch
IPGuard E2 1+1 Smart IP switch for data port redundancy
IPGuard S5 Seamless IP switch for 1+1 stream redundancy
SynFoNizer Multi-link SFN synchronizer
SafeSplitter Dual 1:3 ASI Splitter with TS monitoring

TECHNICAL CHARACTERISTICS

Inputs / outputs
- 2x Gigabit Ethernet Control ports (only one used)
- 2x Gigabit Ethernet data ports (not used)
- 2x DVB-ASI inputs
- 6x DVB-ASI outputs – with two bypass
- Dry relays output

Featuring
- 2x 1:3 ASI Splitter
- Bypass for main output in case of power failure
- ETR290 Level1, Level2 and Level3 monitoring
- Service Availability Error Monitoring
- Service Degradation Monitoring
- Service Bit rate monitoring
- TS multiplex monitoring
- T2-MI monitoring
- Full SNMP v2 support (set, get and traps)
- Easy-to-use web based GUI

APPLICATIONS
- Feed redundant appliances with monitoring
- Advanced TS monitoring

KEY BENEFITS
- Duplicate a single TS over 3 to 5 ASI outputs
- Maintain service continuity during power outage

ORDERING CODES

<table>
<thead>
<tr>
<th>SafeSplitter</th>
<th>dual 1:3 ASI splitter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options</td>
<td></td>
</tr>
<tr>
<td>NN6-In48V</td>
<td>48 V input instead of 110V/220V</td>
</tr>
<tr>
<td>NN6-In220V-Redundant</td>
<td>110/220V redundant power supply</td>
</tr>
<tr>
<td>NN6-In48V-Redundant</td>
<td>48V redundant power supply</td>
</tr>
</tbody>
</table>
**ASIGuard II Seamless ASI switch**

**TECHNICAL CHARACTERISTICS**

| Inputs / outputs | 2x Fast Ethernet control ports (only one used)  
|                  | 2x DVB-ASI inputs  
|                  | 2x DVB-ASI additional inputs with DualSwitch option  
|                  | 2x DVB-ASI mirrored outputs  
|                  | 2x DVB-ASI additional mirrored outputs with DualSwitch option  
|                  | 1x DVB-ASI monitoring output  
|                  | Dry relays output |

| Featuring | Automatic switch between 2 MPEG-2 TS  
|           | Automatic switch between 2 T2-MI streams  
|           | Up to 2 switch function in the same unit (DualSwitch option)  
|           | Optional TS and T2-MI seamless switch capability  
|           | Several switching modes (automatic, priority, manual)  
|           | Flexible switching condition configuration  
|           | ETR290 based switching conditions  
|           | Passive and Advanced bypass mechanisms  
|           | Real-time monitoring of incoming streams |

**APPLICATIONS**

- **1+1 automatic changeover for:**
  - DVB standards (DVB-T/T2/H/S/C)  
  - DTMB standard  
  - ISDB standards  
  - ATSC/ATSC-MH standards
- **TS seamless switch-over**
  - SFN seamless switching  
  - Alignment of 2 identical MPEG-2 TS but delayed in a MFN environment
- **DVB-T2 seamless switch-over:**
  - Seamless 1+1 redundancy of T2Gateways with T2Guard  
  - patent technology  
  - Alignment of 2 identical T2-MI/MPEG-2 TS with delayed in a MFN or SFN environment

**KEY BENEFITS**

- Avoid TV black-out in SFN (and MFN in DVB-T2)  
- Seamless switch-over with delayed source  
- Multi-standard applicable (DVB, ATSC, ISDB, DTMB)  
- Video agnostic: MPEG-2 or MPEG-4/H.264  
- Maintain service continuity during power outage

**ORDERING CODES**

<table>
<thead>
<tr>
<th>ASIGuard II</th>
<th>1+1 automatic switch</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SeamlessTS</td>
<td>MFN and SFN seamless TS switch</td>
</tr>
<tr>
<td>SeamlessT2-MI</td>
<td>T2-MI MFN and SFN seamless switch</td>
</tr>
<tr>
<td>DualSwitch</td>
<td>Additional 2:1 switch function</td>
</tr>
<tr>
<td>NN6-In48V</td>
<td>48 V input instead of 110V/220V</td>
</tr>
<tr>
<td>NN6-In220V-Redundant</td>
<td>110/220V redundant power supply</td>
</tr>
<tr>
<td>NN6-In48V-Redundant</td>
<td>48V redundant power supply</td>
</tr>
</tbody>
</table>
SAFEGUARD
PRODUCTS

IPGuard E2 1+1 Smart IP switch for data port redundancy

TECHNICAL CHARACTERISTICS

Inputs / outputs
2x Gigabit Ethernet control ports (only one used)
2x Gigabit Ethernet data input ports
2x mirrored Gigabit Ethernet data output ports
Dry relays output

Featuring
Switch-over at data port level
Unicast/Multicast (UDP/IP) streams support
FEC correction and generation (ProMPEG CoP#3 support)
Transparent IP switch
Up to 60 IP streams managed
Up to 2 TSoIP switch and monitoring
TS over IP automatic change-over
T2-MI over IP automatic change-over
Optional Seamless TS and Seamless T2-MI features
IP, ETR 290 and advanced switching conditions
Several switching modes (Automatic, manual, ...)
Bypass mechanism
Real-time monitoring of incoming streams

APPLICATIONS

• 1+1 automatic redundancy of:
  - Multiplexers, T2Gateway, Video over IP Gateways...
• 1+1 automatic change-over between two IP streams
  - Applicable to any data services carried over IP
  - Applicable to any MPEG-2 TS carried over IP
• Seamless switch-over of MPEG-2 TS carried over IP
  - SFN seamless switching
  - Alignment of 2 identical MPEG-2 TS but delayed in a MFN and SFN environment
• Seamless switch-over of T2-MI stream over IP
  - Seamless 1+1 redundancy of T2Gateways with T2Guard patent technology
  - Alignment of 2 identical T2-MI/MPEG-2 TS with delayed in a MFN and SFN environment

KEY BENEFITS

• Multi-standard applicable (DVB, ATSC, ISDB, DTMB)
• Video agnostic: MPEG-2 or MPEG-4/H.264
• Maintain service continuity
• Avoid TV black-out in SFN (and MFN in DVB-T2)
• Seamless switch-over with delayed source
• Transparent for end-to-end devices

ORDERING CODES

<table>
<thead>
<tr>
<th>Options</th>
<th>MFN and SFN seamless TS change-over</th>
</tr>
</thead>
<tbody>
<tr>
<td>SeamlessTS</td>
<td>MFN and SFN seamless T2-MI change-over</td>
</tr>
<tr>
<td>SeamlessT2-MI</td>
<td>Additional 2:1 TS management</td>
</tr>
<tr>
<td>AdditionalTS</td>
<td>48 V input instead of 110V/220V</td>
</tr>
<tr>
<td>NN6-In48V</td>
<td>110/220V redundant power supply</td>
</tr>
<tr>
<td>NN6-In220V-Redundant</td>
<td>48V redundant power supply</td>
</tr>
</tbody>
</table>
**IPGuard S5** Seamless IP switch for 1+1 stream redundancy

### Technical Characteristics

<table>
<thead>
<tr>
<th>Inputs / Outputs</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2x Gigabit Ethernet control ports (only one used)</td>
<td></td>
</tr>
<tr>
<td>2x Gigabit Ethernet data input ports</td>
<td></td>
</tr>
<tr>
<td>2x mirrored Gigabit Ethernet data output ports</td>
<td></td>
</tr>
<tr>
<td>Dry relays output</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Featuring</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch-over at IP stream level</td>
<td></td>
</tr>
<tr>
<td>Unicast/Multicast (UDP/IP) streams support</td>
<td></td>
</tr>
<tr>
<td>FEC correction and generation (ProMPEG CoP#3 support)</td>
<td></td>
</tr>
<tr>
<td>Transparent IP switch</td>
<td></td>
</tr>
<tr>
<td>Up to 5 IP streams managed</td>
<td></td>
</tr>
<tr>
<td>1 seamless TSoIP switch by default</td>
<td></td>
</tr>
<tr>
<td>Up to 5 Seamless TSoIP switch and monitoring (options)</td>
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</tr>
<tr>
<td>IP and TS sync switching conditions</td>
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</tr>
<tr>
<td>Several switching modes (Automatic, manual, ...)</td>
<td></td>
</tr>
<tr>
<td>Bypass mechanism</td>
<td></td>
</tr>
<tr>
<td>Real-time monitoring of incoming streams</td>
<td></td>
</tr>
</tbody>
</table>

### Applications

- **1+1 automatic change-over between two IP streams**
- Applicable to any data services carried over IP
- Applicable to any MPEG-2 TS carried over IP
- **Seamless switch-over of MPEG-2 TS carried over IP**
- SFN seamless switching
- Alignment of 2 identical MPEG-2 TS but delayed in a MFN and SFN environment
- **Seamless switch-over of T2-MI stream over IP**
- Seamless 1+1 redundancy of T2Gateways with T2Guard patent technology
- Alignment of 2 identical T2-MI/MPEG-2 TS with delayed in a MFN and SFN environment

### Key Benefits

- Multi-standard applicable (DVB, ATSC, ISDB, DTMB)
- Video agnostic: MPEG-2 or MPEG-4/H.264
- Maintain service continuity
- Avoid TV black-out in SFN (and MFN in DVB-T2)
- Seamless switch-over with delayed source
- Transparent for end-to-end devices

### Ordering Codes

<table>
<thead>
<tr>
<th>IPGuard S5</th>
<th>Seamless IP switch for 1+1 stream redundancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options</td>
<td>Description</td>
</tr>
<tr>
<td><strong>Seamless TSoIP</strong></td>
<td>Up to 5 seamless TS change-over</td>
</tr>
<tr>
<td>NN6-In48V</td>
<td>48 V input instead of 110V/220V</td>
</tr>
<tr>
<td>NN6-In220V-Redundant</td>
<td>110/220V redundant power supply</td>
</tr>
<tr>
<td>NN6-In48V-Redundant</td>
<td>48V redundant power supply</td>
</tr>
</tbody>
</table>
SynFoNizer Multi-link SFN synchronizer

TECHNICAL CHARACTERISTICS

Inputs / outputs
- 2x Fast Ethernet control ports (only one used)
- 2x Gigabit Ethernet data ports (future use)
- 4x DVB-ASI inputs
- 4x DVB-ASI mirrored outputs
- 1x PPS and 1x10 MHz inputs
- 1x PPS and 1x10 MHz outputs
- Dry relays output

Featuring
- Unique and patented solution
- Very stable output to avoid DVB-T transmitters buffer overflow/underflow
- Several switching modes (automatic with or without priority, manual)
- Flexible switching condition configuration
- Passive and Advanced passthru mechanisms
- 2x Multiplexes simultaneous processing
- Built-in GPS receiver

APPLICATIONS
- Synchronize redundant SFN feeds for:
  - DVB-T Broadcasting
  - DVB-H Mobile TV Broadcasting

KEY BENEFITS
- Avoid TV blackouts in case of network failure
- Reuse existing network equipment
- Address 2 independent Multiplexes at a time
- Maintain service continuity during breakdown
- Monitor each path of your network

ORDERING CODES

<table>
<thead>
<tr>
<th>SynFoNizer</th>
<th>Multi-link SFN synchronizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options</td>
<td>Built-in GPS receiver</td>
</tr>
<tr>
<td>NN6-GPSv2</td>
<td>Built-in GPS receiver</td>
</tr>
<tr>
<td>NN6-In48V</td>
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</tr>
</tbody>
</table>
ULTIMEDGE PRODUCTS

- TxEdge DTH SFN ReMUX
- T2Edge II DVB-T2 local adapter
- T2EdgeDTH DTH T2-MI Generator
- Netmod II DTtv DVB-T2/T/H broadcast modulator

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**TECHNICAL CHARACTERISTICS**

Inputs / outputs
- 2x Gigabit Ethernet control ports (only one used)
- 2x Gigabit Ethernet data ports for IP input and IP output
- 2x DVB-ASI inputs
- 2x DVB-ASI mirrored outputs
- 1x 10 MHz input
- 1x optional RF GPS input
- Dry relays output

Featuring
- Standalone and highly reliable product
- Generation of a DVB-T multiplex for SFN operation
- Deterministic generation based on service reference
- Services filtering and mapping
- PSI/SI update (PAT, PMT, CAT, SDT, EIT)
- PCR restamping
- Optional IP input/output
- FTP configuration upload
- Full SNMP v2 support
- Easy-to-use web based GUI

**APPLICATIONS**
- DVB-T/SFN multiplex generation from DTH source
- Backup you DVB-T transmission site from DTH stream
- Regionalization support

**KEY BENEFITS**
- Bandwidth optimization to reduce annual OPEX
- Reuse existing network equipment
- Transmitter agnostic

**ORDERING CODES**

<table>
<thead>
<tr>
<th>TxEdge</th>
<th>DTH SFN ReMUX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options</td>
<td></td>
</tr>
<tr>
<td>TxEdge-IP</td>
<td>IP input and output support</td>
</tr>
<tr>
<td>TxEdge-T2</td>
<td>Firmware upgrade for local content management in a DVB-T2 stream (T2Edge)</td>
</tr>
<tr>
<td>NN6-GSPv2</td>
<td>Built-in GPS receiver</td>
</tr>
<tr>
<td>NN6-In48V</td>
<td>48 V input instead of 110V/220V</td>
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</tbody>
</table>

DTH + DVB-T

**DTH SFN ReMUX**

**ULTIMEDGE PRODUCTS**
**T2Edge II** DVB-T2 local adapter

### TECHNICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Inputs / outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2x Gigabit Ethernet control ports (only one used)</td>
</tr>
<tr>
<td>2x Gigabit Ethernet data ports for IP input and IP output</td>
</tr>
<tr>
<td>2x DVB-ASI inputs</td>
</tr>
<tr>
<td>2x DVB-ASI mirrored outputs</td>
</tr>
<tr>
<td>Dry relays output</td>
</tr>
</tbody>
</table>

**Featuring**

- Insertion of regional local content into a national T2 MUX
- Based on MPLP substitution mechanism
- Deterministic local TV insertion to enable SFN broadcasting
- No external timing reference needed
- OptiPLP™ option to distribute only useful PLP
- Update SI information to reflect the updated regional/local services
- Bypass mode to guarantee service availability
- Generation of T2-MI packets over ASI

### APPLICATIONS

- DVB-T2/SFN service regionalization
- DVB-T2 ultra-local insertion

### KEY BENEFITS

- Bandwidth optimization to reduce annual OPEX
- Standard-based solution
- Statistical Multiplexing enabler for local content
- Reuse existing network equipment
- Transmitter agnostic

### ORDERING CODES

<table>
<thead>
<tr>
<th>T2Edge II</th>
<th>DVB-T2 local adapter</th>
</tr>
</thead>
</table>

**Options**

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2Edge-IP</td>
<td>IP input and output support</td>
</tr>
<tr>
<td>T2Edge-Bypass</td>
<td>Bypass option to output main T2-MI stream during power outage</td>
</tr>
<tr>
<td>T2Edge-OptiPLP</td>
<td>Optimize network bandwidth by managing only useful PLP</td>
</tr>
<tr>
<td>T2Edge-DTH</td>
<td>Firmware upgrade for combining DTH and T2 services</td>
</tr>
<tr>
<td>NN6-In48V</td>
<td>48 V input instead of 110V/220V</td>
</tr>
<tr>
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</tbody>
</table>
**T2EdgeDTH** DTH to T2-MI Generator

**TECHNICAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Inputs / outputs</th>
<th>Features</th>
</tr>
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<tbody>
<tr>
<td>2x Gigabit Ethernet control ports (only one used)</td>
<td></td>
</tr>
<tr>
<td>2x Gigabit Ethernet data ports for IP input and IP output</td>
<td></td>
</tr>
<tr>
<td>2x DVB-ASI inputs</td>
<td>Standalone and highly reliable product</td>
</tr>
<tr>
<td>2x DVB-ASI mirrored outputs</td>
<td>Deterministic generation of a DVB-T2 multiplex for SFN operation</td>
</tr>
<tr>
<td>Dry relays output</td>
<td>Single and Multiple PLP management</td>
</tr>
<tr>
<td></td>
<td>In-band configuration</td>
</tr>
<tr>
<td></td>
<td>Services filtering and mapping</td>
</tr>
<tr>
<td></td>
<td>PSI/SI update (PAT, PMT, CAT, SDT, EIT)</td>
</tr>
<tr>
<td></td>
<td>Optional IP input/output</td>
</tr>
<tr>
<td></td>
<td>Full SNMP v2 support</td>
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<tr>
<td></td>
<td>Easy-to-use web based GUI</td>
</tr>
</tbody>
</table>

**APPLICATIONS**

- DVB-T2/SFN multiplex generation from DTH source
- Backup DVB-T2 transmission sites with DTH stream
- Regionalization support

**KEY BENEFITS**

- Bandwidth optimization to reduce annual OPEX
- Reuse existing network equipment
- Transmitter agnostic

**ORDERING CODES**

<table>
<thead>
<tr>
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<tr>
<td>T2EdgeDTH-IP</td>
<td>IP input and output support</td>
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</tbody>
</table>
**Netmod II DTTV** DVB-T2/T/H broadcast modulator

### KEY BENEFITS
- Multi standard (T2/T2-Lite/T/H) modulation
- MFN/SFN, MISO and Multiple PLP adaptation
- Seamless integration with any transmitter
- Interoperability proven with major DVB-T2 Gateway
- Field test proven

### APPLICATIONS
- Digital terrestrial TV (DVB-T2, DVB-T/H) broadcasting
- Integration in power transmitter
- SFN MISO transmissions
- Multiple PLP broadcasting

### TECHNICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Inputs / outputs</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1x Fast Ethernet control port</td>
<td>Outstanding MER, phase noise and stability</td>
</tr>
<tr>
<td>1x Gigabit Ethernet data port</td>
<td>Single and multiple PLP support</td>
</tr>
<tr>
<td>2x DVB-ASI inputs</td>
<td>T2-base and T2-lite broadcasting</td>
</tr>
<tr>
<td>1x PPS and 1x 10 MHz inputs</td>
<td>Manual or automatic Adaptive Digital Pre-Correction</td>
</tr>
<tr>
<td>1x TNC input for built-in GPS (option)</td>
<td>TS and T2-MI stream input (through ASI and IP)</td>
</tr>
<tr>
<td>1x Main RF output</td>
<td>ProMPEG CoP#3 input support</td>
</tr>
<tr>
<td>1x Monitoring RF output</td>
<td>Available with RF and IF outputs (for Netmod DTTV-IF only)</td>
</tr>
<tr>
<td>1x Optional IF output</td>
<td>SFN and MISO broadcasting</td>
</tr>
<tr>
<td>2x RF feedback inputs</td>
<td>PAPR reduction support</td>
</tr>
<tr>
<td>Dry relays output</td>
<td>FEF broadcasting</td>
</tr>
<tr>
<td>1x 48 V input instead of 110V/220V</td>
<td>Intuitive Graphical User Interface with automated help</td>
</tr>
</tbody>
</table>

### ORDERING CODES

<table>
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<tr>
<th>Options</th>
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</tr>
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<tbody>
<tr>
<td>NetMod-MPLP-2</td>
<td>Management of up to 2 Multiple-Physical Layer Pipes for DVB-T2 modulation</td>
</tr>
<tr>
<td>NetMod-MPLP-8</td>
<td>Management of up to 8 Multiple-Physical Layer Pipes for DVB-T2 modulation</td>
</tr>
<tr>
<td>NetMod-ADPC</td>
<td>Automatic Adaptive Digital Pre-Correction</td>
</tr>
<tr>
<td>NetMod-SFP</td>
<td>SFP slot input</td>
</tr>
<tr>
<td>NN6-GPSv2</td>
<td>Built-in GPS receiver</td>
</tr>
<tr>
<td>NetMod-IFOutput</td>
<td>IF output</td>
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