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Founded in 2000

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# TranStorm F-4000

## (4K UHD File Encoder)

**TranStorm F-4000** is a high-performance 4K UHD HEVC File Transcoder which operates independently without additional equipment for management and provides excellent scalability and compatibility.

**TranStorm F-4000** provides the highest level of video quality, even within a limited bandwidth, from Thin Multimedia's codec algorithm and functionality to control various video quality levels. It has an automation function and various file conversion functions.

**High performance & Excellent scalability** & **Optimized bitrate efficiency for Best Quality** & **Automated & Efficient workflow**


### TranStorm F-4000 Features

| | |
|---|---|
| **Powerful Transcoding** (High-end & high-quality) | • HEVC International Standard Main & Main10 profile @ Level 5.1<br>• 4K UHD , 30/60 fps, ~ 50Mbps<br>• 4:2:0 8bit/10 bit color depth<br>• Open GOP & Closed GOP<br>• Efficient parallel scheme with WPP (wavefront parallel processing)<br>• Configurable GOP size with Hierarchical B frame<br>• High-speed conversion via optimized conversion algorithm and parallel encoding scheme<br>• High-quality encoding via Thin Multimedia's codec algorithm<br>• Variety of bitrate control scheme(CBR / VBR / Capped VBR / ABR / CQP )<br>• Support variety of HEVC encoding options<br>• Support variety of Protocol and format - MPEG2 TS, MP4, HLS |
| **Support N-Screen** | • Support Multi-Resolution & Multi-Bit Rate output : QCIF ~ UHD, 64Kbps ~ 50M<br>• Multi-Output : A variety of preset management capabilities |
| **Automated Workflow** | • Job Management : Automated conversion, distribution and deployment<br>• Watch Folder Transcoding : Once content is acquired, it is detected automatically and converted. |
| **Scalability and Compatibility** | • Easy upgrade and scalability via flexible S/W encoding scheme<br>• Compatibility via supporting standard codec, container and transmission format |
| **Web-based Control UI** | • Variety of task management functions : Preset, Jobs, Watch Folders, Logs, and Users<br>• Integrated monitoring for the status of converting progress and system<br>• Report the conversion result |
| **A variety of add-ons** | • Pre/Post image & Video insert feature<br>• Logo/Subtitle insert feature : Customization of location, size, color, etc. |

## TranStorm F-4000 Specifications

| Input | Baseband input | File |
|---|---|---|
| Video Compression | Codec | HEVC (H.265) Main/Main10 Profile, Main/High Tier @ Level 1 ~ 5.1<br>H.264 Baseline, Main and High Profile @ Level 1 ~ 5.1 |
| | Rate control | CBR / VBR / Capped VBR / ABR/ CQP |
| | Date rate | 64Kbps ~ 50Mbps |
| | Resolutions | 3840x2160 (4K UHD), 1080p, 720p, 480p, Custom size |
| | Frame rate | 30fps, 60fps, Custom frame-rate, Maintaining original frame-rate |
| Audio Compression | Multi Track | Up to 8 Audio Track |
| | Codec | MPEG2/4 AAC_LC (8k, 11.025k, 12k, 16k, 22.05k, 24k, 32k, 44.1k, 48kHz)<br>HE-AAC v1/v2 (16k, 22.05k, 24k, 32k, 44.1k, 48kHz)<br>MPEG 1 Layer I, II, III (32k, 44.1k, 48kHz)<br>MPEG 2 Layer I, II, III (16k, 22.05, 24kHz)<br>AC3 pass-through |
| | Pass-through | Dolby AC-3 (stereo or 5.1) |
| | Data rate | MPEG2/4 AAC_LC (8kbps ~ 320kbps)<br>HE-AAC v1/v2(8kbps ~ 320kbps)<br>MPEG 1 Layer Ⅰ,Ⅱ, Ⅲ(32kbps ~ 320kbps)<br>MPEG 2 Layer Ⅰ,Ⅱ, Ⅲ(8kbps ~ 160kbps) |
| Pre-processing | Resize mode | SAR, Letter box, Stretch, Landscape criteria, Portrait criteria |
| | Image Filters | Brightness, Contrast, Saturation, Hue, De-noise, Sharpen filter |
| | Video enhancement filters | De-interlacing, Crop, Resize (Fast-Bilinear, Biliner, Bicubic, Area, Lancoz) |
| | Audio enhancement filters | Audio Gain/Loudness Normalizer, CBR/VBR |
| | Subtitle | Auto/Manual loading : SRT, SMI, SUB, ASS, SSA<br>Overlay with custom font, size, align, margin, color adjustment<br>Closed Caption EIA-708-D DTVCC |
| | Insertion | Pre / Post image/audio & Video insertion<br>Logo overlay |
| Post processing | Meta data | Thumbnail image (PNG JPEG), EIA-708-D DTVCC pass-through<br>Thumbnail Multi Extraction Type / Interval, Multi Extraction Size |
| Output | Muxer | MPEG-2 TS , MPEG-2 TS (HLS), MP4 |
| Monitor and control | Protocol | HTTP, NTP, FTP, SNMP v2 |
| | Control | WEB GUI |
| | NMS | Self Failover, Process Node management, Remote management<br>Dynamic Task Distribution Management |

## TranStorm F-4000 Physical

| ITEM | CONTENT | ITEM | CONTENT |
|---|---|---|---|
| CPU | Intel Xeon® processor | Network | Gigabit 4 port |
| Memory | 64~128GB | Power | 750W Redundant |
| HDD | 2TB | Size/weight | 1RU(429*43*734mm) / 19.3kg |

# TranStorm F-300

## (File Transcoder)

**TranStorm F-300 is a high-performance file transcoder which operates independently without additional equipment for management and provides excellent scalability and compatibility.**
**TranStorm F-300 provides the highest level of video quality, even within a limited bandwidth, from Thin Multimedia's codec algorithm and functionality to control various video quality levels. It has an automation function and various file conversion functions such as HLS, HDS and MS smooth streaming.**

**High performance & Excellent scalability** & **Optimized bitrate efficiency for Best Quality** & **Automated & Efficient workflow**


### TranStorm F-300 Features

| | |
|---|---|
| **Powerful Transcoding** (High-end & high-quality) | • High-speed conversion via optimized conversion algorithm and parallel encoding scheme<br>• High-quality encoding via Thin Multimedia's codec algorithm<br>• Variety of bitrate control scheme (CBR / VBR / Capped VBR / ABR / CQP / 2-Pass)<br>• Support variety of encoding options |
| **Support N-Screen** | • Support a wide variety of codecs and file formats for IPTV, Smart TV, Smart Phone, PC and N-screen services<br>• Multi-Resolution and Multi-Bit Rate: QCIF ~ 4HD, 32 kbps ~ 30Mbps<br>• Multi-codec & Multi-format Transcoding: MPEG2 TS, MP4, HLS, HDS(f4f), MS smooth streaming (ismv)<br>• Multi-Output: A variety of preset management capabilities |
| **Automated Workflow** | • Job Management : Automated conversion, distribution and deployment<br>• Watch Folder Transcoding : Once content is acquired, it is detected automatically and converted |
| **Web-based Control UI** | • Variety of task management functions : Preset, Jobs, Watch Folders, Logs, and Users<br>• Integrated monitoring for status of converting progress and system<br>• Report conversion result |
| **Scalability and Compatibility** | • Easy upgrade and scalability via flexible S/W encoding scheme<br>• Compatibility via supporting standard codec, container and transmission format |
| **A variety of add-ons** | • Pre/Post image & Video insert feature<br>• Logo/Subtitle insert feature : Customization of location, size, color, etc. |

## TranStorm F-300 Specifications

| Input | Baseband input | File |
|---|---|---|
| Video Compression | Codec | • H.264 Baseline, Main and High Profile (Profile @Level 0 ~ 5.1)<br>• MPEG-2 Simple, Main, and High Profile<br>• WMV 8/9/VC-1 Profile |
| | Rate control method | • CBR / VBR / Capped VBR / ABR / CQP / 2-Pass |
| | Data rate | • 64Kbps ~ 20Mbps |
| | Resolutions | • 128x128 ~ 1920x1080(1080p) / 480p(i)~ 1080p(i) / Custom |
| | Frame rate | • Maintaining original, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23.98, 24, 25, 29.97, 30, 59.94, 60 |
| Audio Compression | Multi Track | • Up to 8 Audio Track |
| | Codec | • MPEG2/4 AAC_LC(8k, 11.025k, 12k, 16k, 22.05k, 24k, 32k, 44.1k, 48kHz)<br>• HE-AAC v1/v2(16k, 22.05k, 24k, 32k, 44.1k, 48kHz)<br>• MPEG 1 Layer Ⅰ,Ⅱ, Ⅲ(32k, 44.1k, 48kHz)<br>• MPEG 2 Layer Ⅰ,Ⅱ, Ⅲ(16k, 22.05, 24kHz) |
| | Pass-through | • Dolby AC-3 (up to 5.1) |
| | Data rate | • MPEG2/4 AAC_LC(8kbps ~ 320kbps)<br>• HE-AAC v1/v2(8kbps ~ 320kbps)<br>• MPEG 1 Layer Ⅰ,Ⅱ, Ⅲ(32kbps ~ 320kbps)<br>• MPEG 2 Layer Ⅰ,Ⅱ, Ⅲ(8kbps ~ 160kbps) |
| Pre-processing | Resize mode | • SAR, Letter box, Stretch, Landscape criteria, Portrait criteria |
| | Image Filters | • Brightness, Contrast, Saturation, Hue, De-noise, Sharpen filter |
| | Video enhancement filters | • De-interlacing, Crop, Resize (Fast-Bilinear, Biliner, Bicubic, Area, Lancoz) |
| | Audio enhancement filters | • Audio Gain/Loudness Normalizer, CBR/VBR |
| | Subtitle | • Auto/Manual loading : SRT, SMI, SUB, ASS, SSA<br>• Overlay with custom font, size, align, margin, color adjustment<br>• Closed Caption EIA-708-D DTVCC |
| | Insertion | • Pre / Post image/audio & Video insertion<br>• Logo overlay |
| Post processing | Thumbnail | • Thumbnail image (PNG JPEG), EIA-708-D DTVCC pass-through<br>• Thumbnail Multi Extraction Type / Interval, Multi Extraction Size |
| Output | Muxer | • MPEG-2 TS , MPEG-2 TS (HLS)<br>• MP4 , WMV, FLV, F4F (HDS)<br>• ISMV (MS smooth streaming) |
| Monitor and control | Protocol | • HTTP, NTP, FTP, SNMP v2 |
| | Control | • WEB GUI |
| | NMS | • Self Failover, Process Node management, Remote management<br>• Dynamic Task Distribution Management |

## TranStorm F-300 Physical

| ITEM | CONTENT | ITEM | CONTENT |
|---|---|---|---|
| CPU | Intel Xeon® processor | Network | Gigabit 4 port |
| Memory | 8GB | Power | 750W Redundant |
| HDD | 300GB | Size/weight | 1RU(429*43*734mm) / 19.3kg |

# TranStorm L-4200

## (4K UHD Live Encoder)

**TranStorm L-4200** is a 4K UHD HEVC Live Encoder/Transcoder which delivers real-time broadcasting service over Terrestrial, Satellite, Cable TV, IPTV and Unmanaged IP networks.

**TranStorm L-4200** supports HEVC Main profile @ Level 5.1, 3840x2160 resolution, 60p frame-rate, based on state of the art s/w HEVC codec that reduces bandwidth consumption compared to H.264 by around 50%. Thanks to Thin Multimedia's s/w HEVC codec, new features and application s/w can be easily integrated into TranStorm L-4200 as well as the highest performance can be maintained by simple s/w upgrade.

**High density multi-profile transcoder** & **Produce pristine video quality over the lowest bitrates** & **All-in-one solution increasing operational efficiencies**

### TranStorm L-4200 Features

| | |
|---|---|
| **Support UHD HEVC Encoding** | • HEVC International Standard Main profile @ Level 5.1<br>• 4K UHD, upto 60 fps, upto 40Mbps<br>• Open GOP & Closed GOP<br>• Efficient parallel scheme with WPP (wavefront parallel processing)<br>• Configurable GOP size with Hierarchical B frame<br>• High-quality encoding via Thin Multimedia's codec algorithm<br>• Variety of bitrate control scheme (CBR / VBR / Capped VBR / CQP)<br>• Support variety of HEVC encoding options |
| **Support N-Screen** | • Support Multi-Resolution & Multi-Bit Rate : SD ~ UHD, 1Mbps~40Mbps<br>• Multi-codec & Multi-format Transcoding : MPEG2 TS, MP4, HLS, RTP/RTS<br>• A variety of preset management capabilities |
| **Excellent Flexibility and scalability** | • Centralized control of Real-time broadcasting and value set<br>• Various H/W system acceptance via flexible S/W encoding scheme |
| **Scalability and Compatibility** | • DVB-ASI Baseband output<br>• RTP/RTSP protocol IP stream output<br>• File / VoD output : MPEG2 TS, HLS, MP4 |

## TranStorm L-4200 Specifications

| | | |
|---|---|---|
| **Input** | Baseband input | • HD/SD-SDI, 3G SDI x 4 |
| | IP stream input | • 1000Mbps Ethernet port (2ea)<br>• IPV4/IPV6<br>• TS over UDP / TS over RTP |
| **Video Compression** | Codec | • HEVC (H.265) Main and Main 10 Profile, Main Tier @ Level 5.1 |
| | Rate control Method | • CBR / VBR / Capped VBR / CQP |
| | Data rate | • Upto 40Mbps |
| | Resolutions | • 3840x2160(4K UHD), 1080p, 720p, 480p, Custom size |
| | Frame rate | • 29.97fps, 30fps, 59.94fps, 60fps, Custom frame-rate, Maintaining original frame-rate |
| **Audio Compression** | Audio channels | • Up to 8 stereo channels, 5.1 channel |
| | Codec | • MPEG2/4 AAC_LC, HE-AAC v1/v2 ( 44.1k, 48kHz)<br>• Dolby AC-3 pass-through |
| | Data rate | • MPEG2/4 AAC_LC, HE-AAC v1/v2 (8kbps~320kbps) |
| **Pre-processing** (option) | Image settings | • Brightness, Contrast, Saturation, Hue, Denoise filter |
| | Video enhancement filters | • Deinterlacing, Scaling |
| | Audio enhancement filters | • Audio Gain/Loudness Normalizer, CBR/VBR |
| | Image insertion | • Default /custom image, logo insertion |
| **Post processing** | Meta data | • Thumbnail image (PNG JPEG), EIA-708-D DTVCC pass-through |
| **Output** | IP Stream output (Multi output) | • 1000Mbps Ethernet port (2ea)<br>• IPV4/IPV6<br>• MPEG-2 TS<br>• TS over UDP / TS over RTSP/RTP<br>• HLS |
| | Baseband output | • HD/SD-SDI (4 output) |
| | File/VoD | • MPEG-2 TS, MP4, HLS |
| **Dimensions (4U rackmount)** | Chassis (WxHxD) | • 17.48 x 6.88 x 29 in (444 x 176 x 736mm) |
| | Weight | • 52.87kg |
| **Power (Dual power)** | AC input voltage | • 200 ~ 240 VAC |
| | Rated output power | • 2000W |
| **Operation environment** | Temperature | • 10℃ ~ 35℃ |
| | Humidity | • 10% ~ 90% |
| **Monitor and control** | Protocol | • HTTP, NTP, FTP, SNMP v2 |
| | Control | • WEB GUI |

# TranStorm L-400

## (Live Encoder)

TranStorm L-400 is a full HD HEVC and H.264/AVC live encoder/transcoder which supports variety of N-Screen terminals such as IPTV, Smartphones, Tablets and PCs.

TranStorm L-400 supports multiple file input via four 3G/HD-SDI ports and two Ethernet ports and generates multiple output with different resolutions and bitrates from a single video input.

High density multi-profile transcoder & Produce pristine video quality over the lowest bitrates & All-in-one solution increasing operational efficiencies


## TranStorm L-400 Features

| | |
|---|---|
| Support high-definition video | • High-quality encoding via Thin Multimedia's codec algorithm<br>• Support HEVC and H.264/AVC encoding with variety of encoding options<br>• Support high-definition video through various bit rate control schemes |
| Support N-Screen | • Support Multi-Resolution & Multi-Bit Rate output : QCIF ~ 4HD, 32 kbps ~ 30Mbps<br>• Multi-codec & Multi-format Transcoding : MPEG2 TS, MP4, HLS, RTP/RTSP, MS smooth streaming(ismv)<br>• Multi-Output : A variety of preset management capabilities |
| Improved Web-based UI | • System management functions : Channel Management, Network Management, Equipment Management, Preset Management, Transfer Management, Log & Alarm Management etc.<br>• Integrated real-time conversion and system status monitoring |
| Excellent Flexibility and scalability | • Centralized control of Real-time broadcasting and value set<br>• Various H / W system acceptance via flexible S/W encoding scheme |
| High stability | • Support 24 * 7 service via Channel level & Device level redundancy functions<br>• Immediate automatic switching when error occur<br>• Periodical automatic backup and recovery |
| Support for a variety of add-ons | • Dynamic Image & Video Insert : Insert Ads or emergency information during a broadcast<br>• Logo Insertion : Customization of Location, size, color, etc.<br>• Multi thumbnail extraction : Extract the desired size in a certain interval depending on user settings<br>• File / VOD output : MPEG2 TS, HLS, MP4, 3GPP, etc. |

## TranStorm L-400 Specifications

| | | |
|---|---|---|
| **Input (2 Full HD Stream)** | Baseband input | • HD/SD-SDI (4 input) |
| | IP stream input | • 1000Mbps Ethernet port (2ea)<br>• IPV4/IPV6<br>• TS over UDP / TS over RTP |
| **Video Compression** | Codec | • HEVC (H.265) Main and Main10 profile @ Level 1 ~ 4.1<br>• H.264 Baseline, Main and High Profile @Level 1 ~ 4.2 |
| | Rate control | • CBR / VBR / ABR |
| | Data rate | • 64Kbps ~ 20Mbps |
| | Resolutions | • 128x128 ~ 1920x1080(1080p) / 480p(i)~ 1080p(i) for H.264 |
| | Frame rate | • 5 ~ 30 (60Hz) |
| **Audio Compression** | Audio channels | • Up to 8 stereo channels |
| | Codec | • MPEG2/4 AAC_LC (8k, 11.025k, 12k, 16k, 22.05k, 24k, 32k, 44.1k, 48kHz)<br>• HE-AAC v1/v2 (16k, 22.05k, 24k, 32k, 44.1k, 48kHz)<br>• MPEG 1 Layer Ⅲ (32k, 44.1k, 48kHz)<br>• MPEG 2 Layer Ⅲ (16k, 22.05, 24kHz) |
| | Pass-through | • Dolby AC-3 (stereo or 5.1) |
| | Data rate | • MPEG2/4 AAC_LC (8kbps ~ 320kbps)<br>• HE-AAC v1/v2 (8kbps ~ 320kbps)<br>• MPEG 1 Layer Ⅲ (32kbps ~ 320kbps)<br>• MPEG 2 Layer Ⅲ (8kbps ~ 160kbps) |
| **Pre-processing** | Aspect ratio | • Letter box, Stretch, SAR |
| | Image settings | • Brightness, Contrast, Saturation, Hue, Denoise filter |
| | Video enhancement filters | • Deinterlacing, Cross-scaling (SD to HD / HD to SD) |
| | Audio enhancement filter | • Audio Gain/Loudness Normalizer, CBR/VBR |
| | Image insertion | • Default /custom image, logo insertion |
| **Post processing** | Meta data | • Thumbnail image (PNG JPEG), EIA-708-D DTVCC pass-through |
| **Output (4 output per input stream)** | IP Stream output (Multi output) | • 1000Mbps Ethernet port (2ea)<br>• IPV4/IPV6<br>• TS over UDP / TS over RTSP/RTP<br>• MP4(3GPP/3GP2) over RTSP/RTP<br>• HLS |
| | Baseband output | • HD/SD-SDI (4 output) |
| | File/VOD | • MPEG-2 TS, MP4, HLS |
| **Dimensions (1U rackmount)** | Chassis (WxHxD) | • 16.9 x 1.7 x 28.9 in (429 x 43 x 734mm) |
| | Weight | • 19.3kg |
| **Power (Dual power)** | AC input voltage | • 200 ~ 240 VAC |
| | Rated output power | • 994W |
| **Operation environment** | Temperature | • 10℃ ~ 35℃ |
| | Humidity | • 8% ~ 90% |
| **Monitor and control** | Protocol | • HTTP, NTP, FTP, SNMP v2 |
| | Control | • Front panel LCD control I/F, WEB GUI |

# TranStorm L-310

## (Live Encoder)

**TranStorm L-310 is a full HD H.264/AVC live encoder/transcoder which supports variety of N-Screen terminals such as IPTV, Smartphones, Tablets and PCs.**

**TranStorm L-310 supports multiple file input via four 3G/HD-SDI ports and two Ethernet ports and generates multiple output with different resolutions and bitrates from a single video input.**

High density multi-profile transcoder & Produce pristine video quality over the lowest bitrates & All-in-one solution increasing operational efficiencies


## TranStorm L-310 Features

| | |
|---|---|
| Support high-definition video | • High-quality encoding via Thin Multimedia's codec algorithm<br>• Support high-definition video through various bit rate control schemes |
| Support N-Screen | • Support Multi-Resolution & Multi-Bit Rate output : QCIF ~ 4HD, 32 kbps ~ 30Mbps<br>• Multi-codec & Multi-format Transcoding : MPEG2 TS, MP4, HLS, RTP/RTSP, MS smooth streaming(ismv)<br>• Multi-Output : A variety of preset management capabilities |
| Improved Web-based UI | • System management functions : Channel Management, Network Management, Equipment Management, Preset Management, Transfer Management, Log & Alarm Management etc.<br>• Integrated real-time conversion and system status monitoring |
| Excellent Flexibility and scalability | • Centralized control of Real-time broadcasting and value set<br>• Various H / W system acceptance via flexible S/W encoding scheme |
| High stability | • Support 24 * 7 service via Channel level & Device level redundancy functions<br>• Immediate automatic switching when error occur<br>• Periodical automatic backup and recovery |
| Support for a variety of add-ons | • Dynamic Image & Video Insert : Insert Ads or emergency information during a broadcast<br>• Logo Insertion : Customization of Location, size, color, etc.<br>• Multi thumbnail extraction : Extract the desired size in a certain interval depending on user settings<br>• File / VOD output : MPEG2 TS, HLS, MP4, 3GPP, etc. |

## TranStorm L-310 Specifications

| | | |
|---|---|---|
| **Input (2 Full HD Stream)** | Baseband input | • HD/SD-SDI (4 input) |
| | IP stream input | • 1000Mbps Ethernet port (2ea)<br>• IPV4/IPV6<br>• TS over UDP / TS over RTP |
| **Video Compression** | Codec | • H.264 Baseline<br>• Main and High Profile (Profile @Level 1 ~ 5.1) |
| | Rate control | • CBR / VBR / ABR |
| | Data rate | • 64Kbps ~ 20Mbps |
| | Resolutions | • 128x128 ~ 1920x1080(1080p) / 480p(i)~ 1080p(i) |
| | Frame rate | • 5 ~ 30 (60Hz) |
| **Audio Compression** | Audio channels | • Up to 8 stereo channels |
| | Codec | • MPEG2/4 AAC_LC (8k, 11.025k, 12k, 16k, 22.05k, 24k, 32k, 44.1k, 48kHz)<br>• HE-AAC v1/v2 (16k, 22.05k, 24k, 32k, 44.1k, 48kHz)<br>• MPEG 1 Layer Ⅲ (32k, 44.1k, 48kHz)<br>• MPEG 2 Layer Ⅲ (16k, 22.05, 24kHz) |
| | Pass-through | • Dolby AC-3 (stereo or 5.1) |
| | Data rate | • MPEG2/4 AAC_LC (8kbps ~ 320kbps)<br>• HE-AAC v1/v2 (8kbps ~ 320kbps)<br>• MPEG 1 Layer Ⅲ (32kbps ~ 320kbps)<br>• MPEG 2 Layer Ⅲ (8kbps ~ 160kbps) |
| **Pre-processing** | Aspect ratio | • Letter box, Stretch, SAR |
| | Image settings | • Brightness, Contrast, Saturation, Hue, Denoise filter |
| | Video enhancement filters | • Deinterlacing, Cross-scaling (SD to HD / HD to SD) |
| | Audio enhancement filter | • Audio Gain/Loudness Normalizer, CBR/VBR |
| | Image insertion | • Default /custom image, logo insertion |
| **Post processing** | Meta data | • Thumbnail image (PNG JPEG), EIA-708-D DTVCC pass-through |
| **Output (4 output per input stream)** | IP Stream output (Multi output) | • 1000Mbps Ethernet port (2ea)<br>• IPV4/IPV6<br>• TS over UDP / TS over RTSP/RTP<br>• MP4(3GPP/3GP2) over RTSP/RTP<br>• HLS |
| | Baseband output | • HD/SD-SDI (4 output) |
| **Dimensions (1U rackmount)** | Chassis (WxHxD) | • 16.9 x 1.7 x 28.9 in (429 x 43 x 734mm) |
| | Weight | • 19.3kg |
| **Power (Dual power)** | AC input voltage | • 200 ~ 240 VAC |
| | Rated output power | • 994W |
| **Operation environment** | Temperature | • 10℃ ~ 35℃ |
| | Humidity | • 8% ~ 90% |
| **Monitor and control** | Protocol | • HTTP, NTP, FTP, SNMP v2 |
| | Control | • Front panel LCD control I/F, WEB GUI |

# thinDeliveryServer

**thinDeliveryServer is a streaming server for on demand and live video streaming over wired or wireless networks. thinDeliveryServer delivers video streams from QVGA to HD with quick response and stability, especially, HLS (HTTP Live Streaming) Adaptive Streaming from a multi-server system which is synchronized to provide seamless streaming without delay.**

## thinDeliveryServer Features

| | |
|---|---|
| **Cross-Platform** | **thinDeliveryServer™ gives you freedom to deploy on the OS of your choice–Windows®, all variants of Linux™, Unix® and Solaris®** |
| **URL Encryption** | **An extra level of security for access to source files, preventing sending illegal requests to the server** |
| **Connection & Session Logs** | **Utilize logs for statistics and data** |
| **Support Cloud Computing** | **Installation and operation on cloud virtual mobilization and storage** |
| **High Streaming Capacity** | **A single server can support up to 1,500 TCP connections** |
| **Support Live TV** | **Minimize initial delay time compared to market competitors** |

| Segment Time | thinDeliveryServer | W | A |
|---|---|---|---|
| 5 seconds | **8 sec** | 18 sec | 23 sec |
| 10 seconds | **18 sec** | 35 sec | 40 sec |

## thinDeliveryServer Specifications

| | | |
|---|---|---|
| **General** | Targets | IPTV, Mobile VOD/TV, Apple HLS |
| | Support OS | Windows OS (2012 over), Linux, Unix 32/64bit |
| **Input** | Device | Files, Live Stream |
| | Format | File: MP4 (PDL),<br>Live Stream: MPEG-2 TS |
| | CODEC | MPEG-1/2/4, H.264 Profile, AAC-LC, HE AAC v1/v2 |
| **Output** | Protocol: Transport | HTTP (PDL), HLS (HTTP Live Streaming), RTSP/RTP/RTCP |
| | Supported file format | MP4, MPEG-2 TS, MPEG-2 TS (segmented file) |
| **Processing** | Authorize | Support user authorized API |
| | Logging | The user's session log for statistics |
| | Traffic | Up to 2 Gbps per-server on standard hardware, more than 1,500 concurrent users |
| **VAS** | Time-shift TV | Time shift TV on Apple HLS |

# TransManager

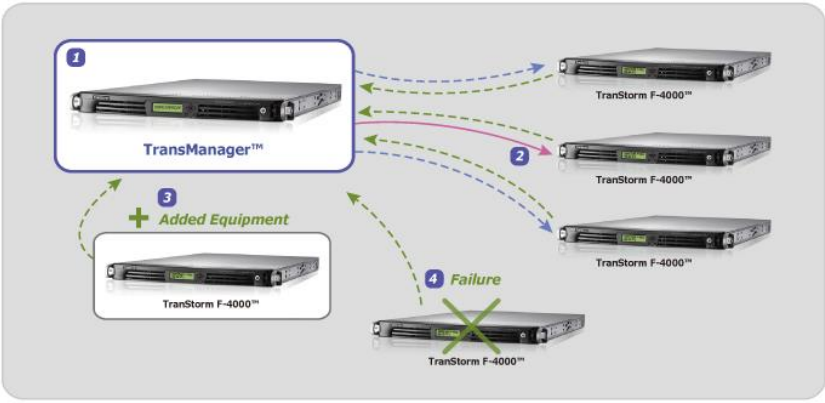
TransManager is a 4K UHD Broadcasting NMS (Network Management System) with a function to automatically allocate encoding works according to resource status of the registered TranStorm and a function to automatically switch to the auxiliary (idle) equipment for service stability upon error.

TransManager is able to identify encoding work load status by periodically receiving reports on status of TranStorm equipment, efficiently manage encoding work through work distribution function to automatically allocate encoding job to the encoder with low load and monitor system and work status in real time.

## TransManager Features

| | |
|---|---|
| Job Scheduler | • Management of all list queues of conversion work<br>• Interoperation with EMS of TranStorm equipment to conversion work<br>: Work distribution and report process, work performance monitoring<br>• Watch Folder management<br>• System Manager interoperation |
| System Manager | • TranStorm equipment management (registration, operation management)<br>• SNMP monitoring of CPU, Memory, Disk, Network, etc.<br>• Interoperation Active with Job Scheduler / Fail system process (Failover) |
| Web UI | • Integrated monitoring on work and system status<br>• Various management functions such as work priority change, Preset registration, equipment registration, configuration, etc. |
| Open API | • External System Interoperation Interface : Media info extract, work addition/deletion/list management, work progress status/result list<br>• Job Scheduler interoperation |

## TransManager Structure




| | |
|---|---|
| Status Report | • System status monitoring and Encoding priority management |
| Conversion Work Scheduling | • To allocate conversion work to the transcoding server with lower system load |
| Encoder Addition / Switching from Stand by to Active | • When receiving new status report from TranStormTM, it is automatically registered as a new system, and on the automatic load distribution subject server depending on Config |
| Failover | • A server without status report transmission for a certain period (Fail) is removed from the management subject list<br>• To recover conversion works allocated to the removed system and process automatic work allocation to other server |

# thinPlayer

**thinPlayer is a multimedia player for smartphones and is compatible with Android and iOS platforms. thinPlayer supports various file formats, codecs and protocols. thinPlayer also has a SDK (Software Development Kit) to help enable multimedia services on a target system in a simple and easy way.**

## thinPlayer Features

| | |
|---|---|
| **Multi-purpose player** | • Play speed control<br>• Screen capture<br>• Subtitle (smi, srt, sub, mkv) with sync control<br>• Audio sync adjustment |
| **Advanced streaming player** | • Progressive Download (MP4, FLV, WMV, WebM)<br>• Real Time Streaming (RTSP, RTMP)<br>• Adaptive Streaming (HLS) |
| **Multi-platform player** | • Android, iOS support |
| **Support Live TV** | • Minimize initial delay time compared to market competitors |


| Segment Time | thinPlayer | A | B |
|---|---|---|---|
| 5 sec | 4 sec | 6 sec | 8 sec |

## thinPlayer Specifications

| | |
|---|---|
| **Video Codec** | MPEG-1, MPEG-2, MPEG-4, XVID, H.263, H.264<br>DivX, Windows Media Video |
| **Audio Codec** | MP2, MP3, AAC-LC, AAC+<br>Windows Media Audio |
| **Streaming Protocol** | RTSP, 3GPP Progressive Download<br>Apple HTTP Live Streaming version 2 |
| **File format** | ISO-compliant (.3GP, .MP4)<br>MPEG-compliant (.MPG, .TS)<br>Microsoft (.AVI, .ASF, .WMV)<br>Adobe (.FLV) and Matroska (.MKV) |

# thinT-DMB

**thinT-DMB is a terrestrial DMB middleware solution which fully supports ETSI (ETSI 300 401) and TTA standard (TTA.KO-07.0024/0026). It provides playback of video and audio, TPEG for traffic and travel information services, BWS decoder for broadcasting websites and a variety of value-added services.**

## thinT-DMB Features

| Simple & modular design for easy integration | |
|---|---|
| Audio/Video Player | • supports H.264/AAC/BSAC<br>• supports Musicam<br>• supports advanced features like PVR/FCC/PIP/Time-shift |
| Data Service Decoder | • supports MOT/TDC<br>• supports SLS/DLS<br>• supports TPEG |
| Channel Manager | • supports Baseband PAL and Network Manager |
| Supported Platforms | • Windows CE, Android, Window 7, Window XP, Nucleus, Embedded Linux |
| Supported Demodulators | • I&C, FCI, RAONTECH, Silicon Labs, Siano, Centronix, PnpNetwork |

## thinT-DMB Specifications

| Compliant with ETSI DAB & TTA T-DMB specifications | |
|---|---|
| Video Codec (H.264) | |
| Audio C - ISO/IEC 14496-1/10, TTAS.KO-07.0026odec (AAC/BSAC) | • ETSI TS 102 563, ISO/IEC 14496-3, TTAS.KO-07.0024 |
| MPEG-2 TS Demux | • ETSI EN 300 744, ISO/IEC 13818-1, TTAS.KO-07.0026 |
| MOT/Slideshow/Dynamic Label Service | • ETSI EN 301 234, TTAS.KO-07.0029<br>• ETSI TS 101 499, TTAS.KO-07.0032<br>• ETSI EN 300 401, TTAS.KO-07.0024 |
| BWS | • ETSI TS 101 498, TTAS.ET-TS101498-1 |
| TDC | • ETSI TS 101 759, TTAS.KO-07.0030 |
| TPEG | • ISO/TS 18234, TTAS.KO-07.0034/0035<br>• TTAS.KO-0036.R1(POI)/037.R1(SDI) / 038.R1(NWS)/0106(DGPS)<br>• CTT_6917(CTT), ISO 18234-4-RTM(RTM) |

# Thin ISDB-T 1-Seg

**thinT-ISDB-T 1-Seg is a terrestrial ISDB-T 1-Seg middleware solution which supports ARIB standard. It provides playback of video service and data services that include Electronic Program Guide(EPG), Closed Caption, bilingual broadcast and Emergency Warning System (EWS). Also Channel manager supports Tuning, Scanning and Hand-over capabilities.**

## Features

**Simple & modular design for easy integration**

| | |
|---|---|
| **Video Player** | • supports H.264/AAC |
| **Data Service Decoder** | • supports Electronic Program Guide(EPG)<br>• supports Closed-Caption<br>• supports bilingual broadcast<br>• supports Emergency Warning System (EWS) |
| **Channel Manager** | • supports Tuning and scanning capabilities<br>• supports Hand-Over |
| **Supported Platforms** | • Windows CE |
| **Supported Demodulators** | • FCI |

## Specifications

**Compliant with ISO/IEC & ARIB ISDB-T 1-Seg specifications**

| | |
|---|---|
| **Video Codec (H.264)** | • ISO/IEC 14496-2 Part10<br>• ARIB STD-B23 |
| **Audio Codec (AAC)** | • ISO/IEC 14496-3 AMENDMENT 1: Bandwidth extension<br>• ARIB STD-B23 |
| **MPEG-2 TS Demux** | • ISO/IEC 13818-1<br>• ARIB STD-B10. STD-B32 |
| **Data Service** | • ARIB STD-B24 |

### MLB(Major League Baseball)
- Streaming Server
- Live Encoder

### Phunware
- Streaming Server
- File Encoder

### Qualcomm
- H.264/AVC Codec

### LSN Mobile
- Streaming Server
- File Encoder

### SKT
- HEVC Live Encoder
- Streaming Server
- File Encoder
- Video Editor
- Contents Management System

### SKP
- Android Player

### KT
- Streaming Server
- Live Encoder
- Real-time Encoder
- File Encoder
- Video Editor
- Contents Management System

### LGU+
- HEVC Live Encoder
- HEVC File Encoder
- Streaming Server

### KBS
- HEVC Studio Codec

### CJ Hellovision
- File Encoder

### 케이블TV VOD
- File Encoder

### Korea Press Foundation
- Ad Platform
- File Encoder
- Contents Management System

### Samsung Electronics
- Android Player
- PC Player
- Live Encoder
- File Encoder
- Video Editor

### LG Electronics
- Player
- Video & Audio Codec

### Thinkware
- Terrestrial DMB terminal solution

### Fine Digital
- Terrestrial DMB terminal solution

### Hyundai Mobis
- Terrestrial DMB terminal solution

### DVS Korea
- Terrestrial DMB terminal solution

### I&C
- Terrestrial DMB terminal solution

### FCI
- Terrestrial DMB terminal solution