



The MCM-9000 provides a complete monitoring solution for all the transmission layers starting from the TS packet header all the way down to the encoded video content and quality. In addition, MCM-9000 creates a visual mosaic from the monitored services with rich data overlay, supplying the operator with a strong tool for error detection and alerting.

The created mosaic is an HD video stream, encoded and transmitted as standard H.264 SPTS – enabling remote monitoring, mobile devices access and very flexible installation topology.

The device monitors complete ETR-101-290 compliance with a rich variety of properties: video freeze, black video, audio silence, audio levels, quantizer levels, color space, resolution change, service bitrate, PMT structure and more.

## FEATURES

- Flexible deployment, due to the unique mosaic over SPTS. Mosaic streaming over regular LAN/WAN network is available.
- High density solution; concurrent monitoring of up to 250 SD per server.
- Ability to mix a variety of sources  
H.264/MPEG-2/HD/SD/RADIO/DATA
- Simultaneous, real-time analysis of all sources on all channels
- Unique alarm trigger settings for individual channels or groups of channels
- Source recording, triggered by any of the event detection rules
- On screen DVB subtitling, Teletext subtitles and Closed-captions rendering

## PRODUCT DETAILS

The MCM-9000 provides three levels of monitoring: transport level monitoring based on ETR-101-290 compliance, content level monitoring, and template based monitoring for detection of configuration changes in the monitored stream.

### Analysis

Transport layer monitoring: ETR-101-290, ATSC A/78A

Video content monitoring: Freeze frame, Black Frame

Audio content monitoring: Audio levels, audio Silence

Subtitles content monitoring: Display and validity

### Stream Capture

Automatic stream capture on error or external trigger

### Data Traffic Monitoring and Logging

Logging of individual PIDs and service bitrates.

Interval based statistics trap generation.

## SPECIFICATIONS

### Supported Video Compression Formats

MPEG-2 Video ..... up to MP@5.1

H.264 Video ..... up to Hi@4.1

Color Space ..... YUV420, YUV422, YUV422-10bit

### Audio Layer Analysis

Audio codec ..... MPEG2 / AAC / HE-AAC / A-52

Audio channel mode ..... 1 / 1+1 / 2 / 5.1

Loudness monitoring.. EBU-R-128/ITU-1770-2/ATSC A/85

Silence detection .... Mono, stereo, dual mono, surround

Clipping detection ..... User adjustable threshold

### Video Layer Analysis

Video codec ..... MPEG2 / H.264

Video encoding ..... level and profile

Video resolution ..... 480i, 576i, 1080i, 1080p

Video aspect ratio ..... 4:3 / 16:9

Video frame rate ..... 25 / 29.97 / 30 / 50 / 59.94 / 60

Video content ..... Black / Freeze / Black with logo

Video quality ..... Blocking detection

## Transport Protocols

Multicast & Unicast..... TS over UDP  
TS over RTP  
TS over H RTP

## Subtitling Analysis

DVB subtitles ..... overlay display  
CC errors ..... Separate rules  
Closed Caption ..... CEA-708,CEA-608  
Multi language support ..... Support for up to 8 PIDs

## Notifications

SNMP ..... Configurable SNMP TRAPS  
SYS LOG ..... Configurable sys-log notifications  
SMTP ..... Email notifications  
Overlay ..... Overlay error display on the mosaic  
Centralized Error Display ..... Group error channels  
to a single display

## Management

Web ..... Complete configuration via web  
Remote ..... JSON WEB services  
CLI ..... Network & software management  
Stacking ..... Group multiple units to a single logical one

## Transport Layer Analysis

ETR, First priority ..... TS sync loss  
Sync byte error  
PAT error  
Continuity count error  
PMT error  
PID error  
ETR, Second priority ..... Transport error  
CRC error  
PCR repetition error  
PCR discontinuity  
PCR accuracy error  
PTS error  
CAT error  
ETR, Third priority ..... NIT actual/other error  
SDT actual/other error  
EIT actual/other error  
RST Error  
TDT Error  
Table analysis ..... TS PSI  
TS DVB\_SI

## Scrambling Analysis

Scrambling verification  
Crypto period measurement  
ECM/EMM existence tests  
ECM Private data change notification

## Mosaic Layouts

User defined layouts, 1-84 channels per layout  
Round-robin layout display  
Up to 32 audio streams loudness display per service  
Overlay display of errors and events (user customized)  
DVB/Teletext/CC subtitling overlay  
Encoded as standard HD service (Multicast SPTS and HLS)  
Selectable encoding H.264 MP@L4 / MPEG-2MP@HL  
Viewable on standard STB, mobile devices and web  
browsers

## Channel Statistics

Service structure tree-view (per PID)  
Display of each PID's bitrate  
Display of service bitrate  
Display of service properties  
Graphical display of audio loudness and True-peak

## License Management

Same license for all services (SD/HD/Radio)  
Dynamic license sharing between devices  
Field upgradable – via FTP, for all licensed features

## Software Maintenance

Field upgradable – via FTP  
Supports dual software image  
Export/import complete system configuration to XML

## Hardware Requirements

Operates on standard off the shelf hardware  
Intel CPU based platforms  
No software installation required

## ORDERING INFORMATION

Base Device:  
MCM-9000 ..... Flexible license model