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MPEG Multistream Transport Monitor

▶ MTM300



The Tektronix MTM300 family of MPEG Transport Stream Monitors – the MTM300 and the MTM301 – are high-performance MPEG protocol monitoring tools giving you innovative solutions to meet the challenges of monitoring quality and reliability, diagnosing problems and characterizing operations in systems broadcasting or distributing MPEG-2 transport streams. The MTM300 products offer powerful acquisition and computational capabilities for monitoring and analyzing transport streams formatted according to MPEG, DVB, ATSC or ISDB standards. These flexible and expandable capabilities include simultaneous 24x7 monitoring of up to four (4) transport streams on the MTM300 and up to eight (8) transport streams on the MTM301. Other capabilities include extensive data rate analysis, and Tektronix-exclusive timing analysis to help you diagnose the most challenging transmission problems and characterize bandwidth usage and system performance.

Real-time Monitoring

The MTM300 uses intuitive icons and colors to indicate the current status of monitored MPEG transport streams. The simple, easy-to-use display indicates:

- The current status of monitored transport streams and the programs within monitored transport streams. Highly visible indicators let you quickly identify the transport stream or program with problems
- The type of problem detected in a monitored transport stream. Intuitive icons show problems in transport stream protocol, timing errors or problems in video or audio elementary streams

Using this display, network operators can quickly identify the nature and source of MPEG transmission problems and initiate appropriate actions.

▶ Features & Benefits

Simultaneous Monitoring and Compliance Testing of Up to Eight MPEG, DVB, ATSC or ISDB Transport Streams for a 24x7 Perspective of Your Network's Health

Status and Error Logging for Capturing Intermittent Problems or Creating Quality Records

Dolby Digital AC-3 and AAC Stream Monitoring to Support Advanced Audio Implementations

Tektronix-exclusive PCR Overall Jitter, Drift and Offset Measurements Allow You to Diagnose the Most Challenging Real-time Performance Problems and Fully Characterize MPEG-2 Transmission

ASI/M2S and SMPTE310M Interfaces Available to Support a Variety of Network Configurations

Flexible, Intuitive Displays of Data Rates and Program Allocations Help You Optimize Bandwidth Usage and Identify Bandwidth Available for Opportunistic Data

Fully Selectable Monitoring Depth, Fault Criteria and Error Reporting and Alarms Let You Customize Monitoring to Your Specific Needs

Triggered Stream Capture on Errors or Critical Events to Help Diagnose and Isolate Elusive Problems

Seamless Integration into SNMP Networks with MIB Based on SNMP Research Technology

▶ Applications

Monitoring MPEG Transport Streams in Digital Television Systems and in Telecommunication Networks to Ensure Quality and Reliability

Diagnosing Problems in Networks Broadcasting or Distributing MPEG Transport Streams

Characterizing Network Performance to Optimize Bandwidth Usage and Ensure Efficient Operations

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Enabling Innovation

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Real-time Analysis

In addition to being an MPEG-2 protocol monitor, the MTM300 products give you powerful real-time analysis capability to help diagnose difficult performance problems and characterize system operation. The MTM300 real-time analysis capabilities include:

- The evaluations recommended by DVB standard TR 101 290 to verify decodability, quality and reliability
- Tektronix-exclusive timing analysis, including PCR overall jitter and wander measurements
- Flexible, intuitive displays of data rates and program allocations
- Real-time analysis of transport streams used in data broadcasting applications based on ISO/IEC 13818-6 (DSM-CC) and EN 301 192 standards
- Triggered capture of transport streams for later in-depth analysis
- Fully selectable monitoring depth, fault criteria and error reporting and alarms
- Status and error logging
- Analysis of Mega-frame Initialization packets used in DVB-T Single Frequency Network applications

Network Oriented Design

Many network analysis tools today use Simple Network Management Protocol (SNMP). The MTM300 monitors use an SNMP agent based on the industry leading SNMP Research technology. This technology ensures an upgrade path for future enhancements. Using SNMP for network management ensures you can integrate the MTM300 or MTM301 into existing SNMP monitoring systems.

Remote, Centralized Monitoring

Most real-world situations require protocol monitors dispersed across your broadcast or distribution network. Managing these remote monitors individually would be a major fiscal responsibility. The network-oriented design of the MTM300 family lets you run, control and configure all of the monitors in your distributed system from a central location.

If you are just setting up a network monitoring system, the MTM3FMS Network Monitoring Station software lets you create a stand alone, centralized monitoring system with minimal effort. From this master monitoring station, you can control, configure and monitor all the MTM300s and MTM301s in your system. The MTM3FMS software also lets you control, configure and monitor all Tektronix PQM300 Program Quality of Service monitors, giving you the ability to monitor both MPEG protocol and program quality throughout your system from a central location.

To implement this centralized monitoring system:

- Install the monitors into your transmission system
- Assign each instrument a unique name and IP address within a unique domain
- Identify a master monitoring station to receive SNMP messages
- Load the MTM3FMS software onto the monitoring station (an NT workstation or server)

With these few steps you are well on your way toward monitoring your transport streams and program content from a central location.

▶ Characteristics

System Characteristics

MPEG Monitoring and Analysis Characteristics –
Supports MPEG-2, DVB, ATSC and ISDB protocols.
Simultaneous, 24x7 monitoring of up to eight (8) MPEG transport streams.
Detects and reports loss of synchronization.
Detects and report errors in stream formats, system information (PSI, SI, PSIP) tables, and video, audio and data content.

Number of Input Interfaces –
Up to four (4) input interfaces on the MTM300.
Up to eight (8) input interfaces on the MTM301.

Maximum Data Rates –
Up to 180 Mb/s with one input.
Up to 45 Mb/s with eight inputs.

Available Interfaces –
Asynchronous Serial Interface (ASI/M2S), SMPTE310M Synchronous Serial Interface.

Interface Characteristics

Platform

Ethernet – 10/100Base-T; RJ-45.

COM Port – RS-232.

Mouse – PS/2.

Keyboard – PS/2.

Printer Port – IEEE P1284.

SVGA – 15-Pin, High density, D-sub.

Graphics – 1024x728, 32 K colors minimum.

Real-time Monitoring/Analysis and Stream Player/Recorder Applications

ASI/M2S (Option AS) –
BNC, Maximum analysis data rate –180 Mb/s, Maximum record/play-out data rate – 140 Mb/s.

SMPTE310M (Option SS) – D25, Data rates – 19 and 38 Mb/s.

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Platform Characteristics

Operating System – Windows® NT 4.0, (Service Pack 5).

Disk Space –
System: 6 GB.
MPEG storage: 27 GB.

RAM – 256 MB.

CD-ROM Drive – 8X.

Display – LCD, 800x600.

Character Input – Touch screen and keypad.

Keyboard and Mouse – Standard.

Power Characteristics

Source Voltage – 100 VAC to 240 VAC_{RMS}, 47 Hz to 63 Hz.

Power Consumption – 170 W, typical.

Environmental and Safety

Safety Class – Class 1.

Equipment Type – Test and measurement.

Temperature – +5°C to +40°C.

Relative Humidity – 80% up to 31°C.

Altitude – 2000 meters.

Overvoltage Category – Category II.

Pollution Degree – 2; rated for indoor use only.

Low Voltage – EN 61010-1:1993.

EC Declaration of Conformity – Meets EN 55103-1/2:1996; Electromagnetic environment E4.

Emissions – EN 55022, class A; EN 55103-1, Annexes A, B and E; IEC 61000-3-2.

Immunity – IEC 61000-4-2, -3, -4, -5, -6 and -11; EN 55103-2, Annex A.

Australia Declaration of Conformity – Meets AS/NZS 2064.

FCC Compliance – Meets FCC CFR Title 47, Part 15, Subpart B, Class A.

Physical Characteristics

Dimensions	cm	in.
Width	43.2	17
Height (without feet)	21.6	8.5
Depth	56	22
Weight	**kg**	**lbs.**
Net	17.3	38
Rack Space	**Height**	**Depth**
Net	5 Rack Units	Standard

▶ Ordering Information

MTM300 Hardware Products

Includes: MTM300 platform, real-time analyzer, software protection key and license sheet, rackmount kit, read this first manual (071-0598-xx), user manual (071-0597-xx), applications CD-ROM (063-3442-xx), operating system CD-ROM (063-3386-xx).

MTM300 Options

Each adds two inputs. Customers must select at least one interface option. System maximum capacity is any two interfaces.

Opt. AS – ASI/M2S Interface.

Opt. SS – SMPTE310 (SSI) Interface.

MTM300 Hardware Upgrade Kits

MTM3FPIA – Adds additional analysis board to an existing MTM300. Customers must select one of the following interface options when ordering the MTM3FPIA; maximum capacity is two.

Opt. AS – ASI/M2S Interface.

Opt. SS – SMPTE310 (SSI) Interface.

MTM301 Hardware Products

Includes: MTM301 platform, real-time analyzer, software protection key and license sheet, rackmount kit, read this first manual (071-0598-xx), user manual (071-0597-xx), applications CD-ROM (063-3442-xx), operating system CD-ROM (063-3325-xx).

MTM301 Options

Each adds two inputs. Customers must select at least two interface options. System maximum capacity is any four interfaces.

Opt. AS – ASI/M2S Interface.

Opt. SS – SMPTE310 (SSI) Interface.

MTM300/MTM301 Family Options and Kits

Hardware Options

Opt. LC – LCD Display, touchscreen and keypad.

Opt. VK – External VGA monitor, keyboard and mouse.

Software Options

MTM3FMS – Network Management Software.

International Power Cord Options

Opt. A1 – Universal Euro power cord.

Opt. A2 – United Kingdom power cord.

Opt. A3 – Australia power cord.

Opt. A5 – Swiss power cord.

Interface Upgrade Kits

MTM3FAS – Adds ASI/M2S Interface to an existing MTM300/MTM301.

MTM3FSS – Adds SMPTE310 Interface to an existing MTM300/MTM301.

Related Products

- ▶ MTG300 MPEG Generator
- ▶ MTM300 MPEG Transport Stream Monitor
- ▶ PQA300 Picture Quality Analysis System
- ▶ PQM300 Program Quality of Service Monitor

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