



DESCRIPTION

Harris' Videotek® VTM Series™ features the world's first user configurable, field upgradeable, multi-format test and measurement console. The innovative modular platform makes the VTM Series™ fully customizable and affords broadcasters unprecedented flexibility to choose exactly how they'll apply Harris' Videotek® award-winning technology. The perfect solution for today's multi-format environment.

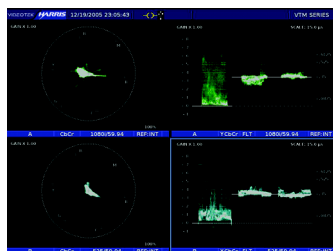
Start with the number of signals that can be monitored. When fully equipped, the VTM Series™ is the only test instrument of its kind that monitors and displays as many as four inputs simultaneously. Harris' proprietary graphic display engines enable multiple input configurations to accommodate any environment. HD/SD, SD-only and composite analog inputs are available. Users can mix and match the appropriate graphic display engine with other options like eye-pattern with jitter display and audio packages featuring Dolby® decoding to create the ideal instrument for their specific need. A further benefit is a clear upgrade path for when those needs change.

Based on the popular VTM products and featuring the same technological advances introduced in Harris' Videotek® TVM instruments, the new VTM Series™ will impress with its functionality offering Waveform, Vector, Gamut, Audio, Picture, Timing, and Data Analyzer screens. But that's just the beginning. Harris' patented Q-SEE™ display enhances the performance of this instrument when viewed on any common XGA monitor.

The VTM Series™ is also loaded with features designed to enhance the user's experience: illuminated controls, simple and intuitive navigation and a compact 1-RU console. Favorite display configurations are instantly recalled using the assignable one-touch presets.

Whether customized with specially selected options or preconfigured by Videotek's experts, the VTM Series™ is the optimal choice for any facility.

VTM SERIES™ DISPLAY VERSATILITY FEATURING Q-SEE™ DISPLAY TECHNOLOGY



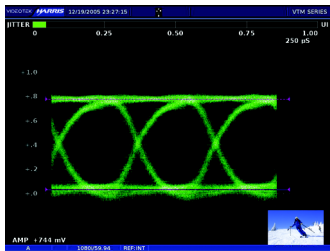
Vector and Waveform Display of HD and SD signals.

FEATURES

- ▶ User Configurable Hardware
- ▶ Display engine flexibility
- ▶ Dual auto detecting inputs for HD/SD-SDI, SD-SDI, or Analog Composite
- ▶ Standards: SMPTE-292M, SMPTE-259M-C, NTSC/PAL
- ▶ Multiple Reference Inputs
- ▶ Capability of displaying up to four different inputs simultaneously
- ▶ Customizable display functions, screen location, multiple displays
- ▶ Video Relative Timing display
- ▶ Patented Gamut display
- ▶ Pixel locator/Data Word Analyzer
- ▶ Picture Thumbnail
- ▶ A/B Parade and Overlay
- ▶ 608, 708 Closed Caption detect, alarm, display
- ▶ Teletext detect, alarm, display
- ▶ Comprehensive Alarm set, Peak Level Report
- ▶ 16 direct-access user presets
- ▶ Illuminated controls and indicators
- ▶ DVI-I output
- ▶ USB ports front and back for data transfer and mouse operation
- ▶ By-pass function enable
- ▶ 10/100BaseT Ethernet, SNMP agent, Web Server, SpyderWeb II
- ▶ GPI and Router control

OPTIONS

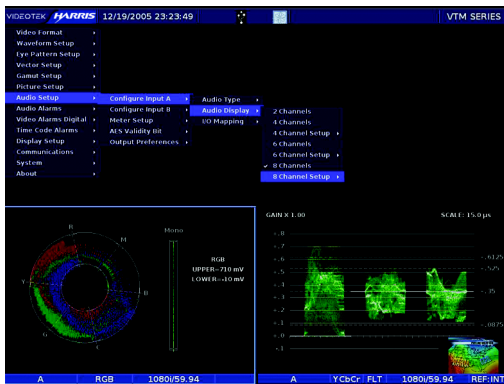
- ▶ Selectable Graphic Display Engines
 - Display capability of one input source at a time
 - Display capability of up to four input sources at a time
 - Advanced Analysis Package with Pixel locator/Data Word Analyzer
- ▶ Selectable Video Input Modules
 - Dual HD/SD-SDI Input
 - Dual HD/SD-SDI Input with Eye Pattern
 - Dual SD-SDI Input
 - Dual SD-SDI Input Module with Eye Pattern
 - Dual ASI Input Module
 - Dual Composite Analog Input (NTSC/PAL)
- ▶ RGB Dual Link
- ▶ Selectable A³, Advanced Audio Analysis
 - Meter and monitor up to eight channels of Analog, AES/EBU and Embedded
 - Dolby® Digital, Dolby® Surround EX™, Dolby® E, Pro-Logic I formats
 - Dolby® decoded outputs
 - "Loudness" metering and alarm
 - Multiple audio Lissajous display



HD Eye Pattern Waveform and Jitter Display with Amplitude Cursors and Picture Thumbnail.



MULTI Mode Display showing Relative Timing with Waveform and Vector.



Example SETUP Menu Navigation

The VTM Series™ console is easily configured via direct access-to-display functions, selectable screen location and context-sensitive pop-up menus. The intuitive navigation system enables easy access to all functions for even the most inexperienced users.

VTM Series™ preconfigured packages

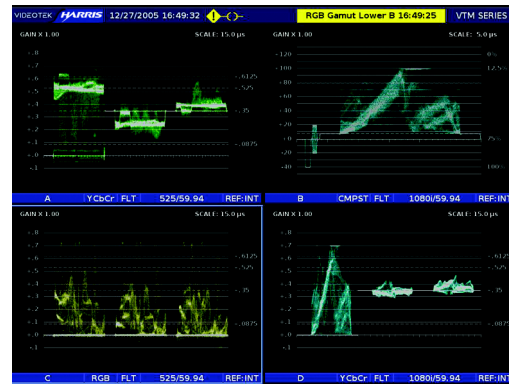
Package	Standard HD/SD Inputs	Standard SD Inputs	Video Optional Inputs	Looping Inputs	WFM	Gamut	Eye Pattern	Vector	Pixel locator/Data word Analyzer	Line Select	Relative Timing	Closed Caption	Alarm Log	Audio	Output Type	Size
VTM-4100 PKG	2	0	2	YES	YES	YES	Option	YES	Option	YES	YES	YES	YES	Advanced Audio Analysis Option	XGA DVI	1RU
VTM-3100 PKG	0	2	2	YES	YES	YES	Option	YES	Option	YES	YES	YES	YES	Advanced Audio Analysis Option	XGA DVI	1RU

Audio options for VTM Series™ instruments

Audio Options	Loudness Monitoring	SNR	Channels Displayed	Embedded Audio	Analog Input Channels	Analog Outputs	AES/EBU Inputs	AES Input Expansion	AES/EBU Outputs **	Channel Map	Dolby Digital Output	Dolby 2-Ch. Decode	Dolby 8-Ch. Decode	Alarms	Dolby Metadata Display
VTM-A ³ Opt. 2	NO	100dB	8	YES	8	8	4	4*	4	NO	NO	NO	NO	YES	NO
VTM-A ³ Opt. 3	YES	100dB	8	YES	8	8	8	Standard	4	YES	NO	NO	NO	YES	NO
VTM-A ³ Opt. 4	YES	100dB	8	YES	8	8	8	Standard	4	YES	YES	YES	NO	YES	NO
VTM-A ³ Opt. 5	YES	100dB	8	YES	8	8	8	Standard	4	YES	YES	YES	YES	YES	YES

* VTM-A3 4004

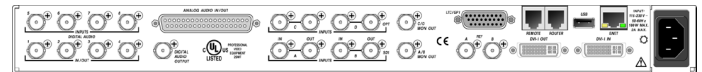
**Shared with AES inputs 1-4



Q-SEE™, Harris' patented display technology, enables users to configure their screen for any specific need. Whether full-screen, quadrant with picture thumbnail, or the convenient MULTI mode, Q-SEE™ can make it happen. Choose from waveform, vector, gamut, audio, picture and timing displays, and place each in any quadrant on the screen.

Q-SEE™ is just one more way the VTM Series™ proves it is the most versatile instrument in its class. When equipped with the proper input options, the VTM Series™ can output four different waveforms to the Q-SEE™ display, from four distinct signals - in essence, handling a job that used to require four separate monitoring instruments.

VTM Series™ Back Panel



SPECIFICATIONS

Specifications and designs are subject to change without notice.

VIDEO

HD/SD-SDI INPUT MODULE

	Two- (2) dual standard inputs accepting Standard definition, SMPTE 259M-C formats or High definition SMPTE 292M, 372M (4:4:4) formats including: 525/59.94, 625/50, 1080i/60, 1080i/59.94, 1080i/50, 1080p/30, 1080p/29.97, 1080p/25, 1080p/24, 1080p/23.98, 1080p/30sF, 1080p/29.97sF, 1080p/25sF, 1080p/24sF, 1080p/23.98sF, 720p/60, 720p/59.94, 720p/50, 720p/30, 720p/29.97, 720p/24, and 720p/23.98
Data Rate:	270 Mb/s, 1.485 Gb/s, auto detect
Connectors:	4 BNCs, Hi-Z passive looping
Level:	800 mV, nominal
Input EQ:	270 Mb/s: 250 meters of 8281 1.485 Gb/s: 100 meters of 8281
Return Loss:	≤ -15 dB 5MHz to 1.485 GHz
SDI Monitor Output:	Follows the selected digital input
Data Rate:	270 Mb/s and 1.485 Gb/s
Connector:	BNC
Level:	800 mV, nominal

SD-SDI INPUT MODULE

	Two (2) SMPTE 259M-C inputs, auto detect 525/59.94, 625/50,
Input Impedance:	Hi-Z, looping
Input EQ:	Up to 250 meters of 8281 at 270 Mb/s
Return Loss:	≤ -25 dB 5 MHz to 270 MHz

ANALOG INPUT MODULE

	Two (2) NTSC/PAL composite video, auto detect
Signal Level:	1V p-p
Input Impedance:	Hi-Z, looping
Return Loss:	≤ -45 dB 100 kHz to 5 MHz
DC Restore Clamp Time:	Back Porch
DC restorer level shift due to pres. Or absence of burst:	≤ 1 IRE/ Unit
DC restorer level shift with change from 50% APL to 10% APL or to 90% APL:	≤ 1 IRE/ Unit
DC restorer 60Hz attenuation:	
Slow:	≤ 5%
Fast:	≥ 90%
Maximum input amplitude:	(AC + DC) +2.5V to -1.5V, DC restorer off, ± 3.0V, DC restorer on
Reference:	Analog Blackburst, NTSC/PAL composite video, Tri-level sync auto detect (per SMPTE 274M)
Levels:	286 mV p-p ± 6 dB (blackburst NTSC) 300 mV p-p ± 6 dB (PAL sync and burst) 600mV p-p ± 3 dB (Tri level Sync)
Impedance:	Selectable Hi-Z looping or 75 ohms Terminating
Return Loss:	≤ -40 dB, 100 kHz to 5 MHz
Connectors:	BNC

DVI-I OUTPUT

Digital Levels:	Per DDWG DVI rev1
R, G, B Levels:	Selectable 0.7 or 1 V p-p, nominal
Pixel Rate:	65 Mp/s
R, G, B Impedance:	75 ohms
Horizontal Sync:	Negative TTL pulse @ 48,363 Hz ± 1%
Vertical Sync:	Negative TTL pulse @ 60.004 Hz ± 1%
Display Accuracy:	± 1% waveform ± 1° vector ± 37 ns Timing Digital ± 300 ns Timing Analog
Connector:	29-pin DVI-I, female

AUDIO OPTIONS

Inputs (Analog):	Eight monophonic or four stereo channels, balanced or unbalanced
Maximum Input Level:	+24 dBu
Input Connector:	37-pin D-sub, male
Impedance:	> 20k ohms
Inputs (Digital):	16 embedded audio channels. Four AES/EBU serial digital pairs, eight AES/EBU pairs with input expansion option. Optional Dolby® E or AC-3 stream.
Input Connectors	Four or eight, BNC, female
Impedance:	75 ohms
Outputs (Analog):	Eight monophonic or four stereo channels, balanced or unbalanced, follows selected audio input. Dolby inputs produce a two channel mix down and/or full 8 channel decode
Output Level:	+24 dBu max. +6 to -50 dB adjustable For digital audio, -20 dBFS produces a +4 dBu analog output level
Output Connector	37-pin D-sub, male, shared with inputs
Impedance:	10 ohms unbalanced or 20 ohms balanced, nominal
Signal To Noise:	100 dB (relative to signal level out of +24 dBu), typical
Outputs (Digital):	4 AES/EBU and one Dolby® Digital, Dolby® E, or AES stream embedded in the selected digital video source
Output Connector:	Four BNC, female shared with input
Impedance:	75 ohms

CONTROL

GPI:	Nine total with four input and five preset recall selections or individually user configured
GPO:	Two Alarms, user configured
Connector:	26-pin HD (high density) D-sub, female
Input Impedance:	10 k ohms returned to +5 VDC
Alarm Output:	Relay closure
Maximum Relay Current:	350 mA @30VDC
External Router Control:	One RJ-11 female, for use with Videotek RS-12A router for input expansion
Peripheral Interface:	USB 1.1 supporting storage devices, mouse and keyboard
Connector:	USB 1.1, Type A, female
Communications:	Ethernet port - 10/100 Base-T
Connector:	RJ-45 Ethernet female

TIME CODE

Input:	LTC, Ancillary Time Code (HD only), DVITC extracted from SD inputs
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DISPLAY

General:	A quadrant display for viewing an input on up to four different displays as picture, waveform, vector, audio, alarm status, timing, optional eye pattern, simultaneously or individually as a full screen display of each separately. Additional data analyzer display for pixel analysis. Also view multiple waveform and vectors of the same or different inputs.
Waveform:	Composite, YCbCr or RGB, parade/overlay of like formats
Sweep Time Base:	1H or 2H, with x1, x5 and x10 horizontal magnification 1V or 2V with x1, x5 and x25 horizontal magnification
Waveform Accuracy:	≤ 1%
Waveform Frequency Response	
Analog:	25 Hz to 5.75 MHz within ± 1% of amplitude at 50 kHz
SD:	± 0.5% to 5.75 MHz Y ± 0.5% to 2.50 MHz C _B , C _R
HD:	± 0.5% to 30 MHz Y ± 0.5% to 15 MHz C _B , C _R
Eye (Optional):	
Sweep Time Base:	Overlay (3 Eye) or 10 Eye (SD), 20 Eye (HD)
Filters:	10 Hz, 100 Hz, 1 kHz
Display Accuracy:	± 1%
Measurement Analog Bandwidth:	250 kHz to 2250 MHz, -3 to +1 dB relative to 750 MHz
Jitter Overshoot:	≤ 20% for all frequencies up to 300 kHz
Intrinsic Jitter:	< 70 ps for HD < 150 ps for SD
Intrinsic Wander:	< 150 ps for HD < 300 ps for SD
Jitter:	Bar graph showing jitter magnitude
Display Range:	0 UI to 1.0 UI
Vector:	R - Y vs. B - Y for Analog C _B vs. C _R for HD or SD
Vector Accuracy:	≤ 1°
Gamut:	Encoded or RGB Gamut displays with upper and lower limit selection
Audio (Optional):	2, 4, 6 or 8 channels displayed simultaneously

POWER REQUIREMENTS

Power Input:	90 to 260 VAC, 50/60 Hz
Power Consumption:	180 VA
Mechanical	
Dimensions:	
Height:	1.75" (4.5 cm)
Width:	19.0" (48.3 cm)
Depth:	19.75" (50.2 cm)

ENVIRONMENTAL

Operating Temperature:	0° to 50°C
Storage Temperature:	-40° to 65°C
Humidity:	85% maximum (non-condensing)
Operating Altitude:	To 10,000 feet (3,050 m) above sea level

STANDARD ACCESSORIES

Operator's manual
One 26-pin D-sub, male for GPI/LTC breakout
DVI to VGA adapter
Rackmount Kit
Power Cord

OPTIONS

VTM-OPT 40:	Graphic Display Engine affords unit display capability of up to four (4) - input source(s) at a time and Advanced Analysis Package functionality. (VTM operation requires VTM-OPT 10 or VTM-OPT 40).
VTM-OPT 10:	Graphic Display Engine affords unit display capability of one (1) - input source at a time. (VTM operation requires VTM-OPT 10 or VTM-OPT 40).
VTM-OPT AAP:	Advanced Analysis Package. Adds Data Analyzer function to VTM-OPT 10 graphic display engine.
VTM-OPT HD/SD:	Two (2) passive looping SMPTE 292M (HD-SDI) and SMPTE 259M-C (SD-SDI) inputs, auto detect and monitor output.
VTM-OPT EYE-2:	Two (2) active looping SMPTE 292M (HD-SDI) and SMPTE 259M-C (SD-SDI) inputs, auto detect with EYE pattern and monitor output.
VTM-OPT SD:	Two (2) passive looping SMPTE 259M-C (SD-SDI) inputs, auto detect and monitor output.
VTM-OPT EYE-1:	Two (2) active looping SMPTE 259M-C (SD-SDI) inputs, auto detect with EYE pattern and monitor output.
VTM-OPT ACV-2:	Two (2) looping analog composite video inputs for NTSC or PAL format, auto detect
VTM-OPT ASI	Dual DVB-ASI/SMPTE 310 input module with MPEG data analysis. Provides transport stream program information and bandwidth measurements. Monitors MPEG and ATSC tables for errors and repetition rates. Alarms for ETSI TR-101-290 first, second and third priority errors.
VTM-OPT DLK	Expands the Dual Link capability to include 10 bit RGB (4:4:4) and RGB + A (4:4:4:4) formats. (Requires VTM-OPT 40)
VTM-A ³ -OPT 2:	Advanced Audio Analysis Option. Bargraphs and CineSound®. View up to 8 audio channels. Includes 4 analog stereo inputs, 4 AES/EBU shared input/output pairs and 16 channels of embedded audio. Analog monitoring outputs of up to 8 channels simultaneously.
VTM-A ³ -OPT 3:	Advanced Audio Analysis Option. Bargraphs and CineSound®. View up to 8 audio channels. Includes 4 analog stereo inputs, 8 AES/EBU inputs with 4 shared output and 16 channels of embedded audio. Analog monitoring outputs of up to 8 channels simultaneously.
VTM-A ³ -OPT 4:	All the features of the VTM-A3-OPT 3 plus Dolby® decoding to mix down analog output.
VTM-A ³ -OPT 5:	All the features of the VTM-A3-OPT 3 plus full Dolby® decoding with up to 8 analog outputs Dolby® metadata display.
VTM-A ³ -4004:	Audio Expansion module. Adds 4 AES/EBU input pairs. Only available with A ³ -OPT 2.
EPC	European Power Cord
EPC-UK	United Kingdom Power Cord
EPC-AA	Australia Power Cord