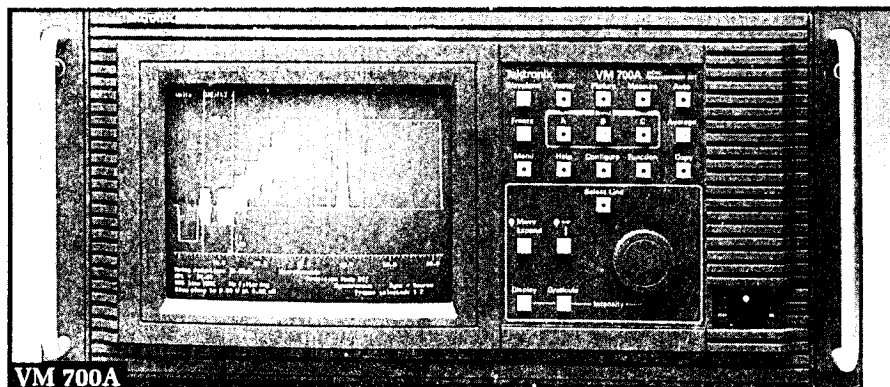# Measurement Sets

## VM 700A • Automatic Video and Audio Measurements

### ◤◢ Features

#### VM 700A
- Video Measurement Set
  - Opt. 01 – NTSC Measurements
  - Opt. 11 – PAL Measurements
  - Opt. 20 – Teletext Measurements
  - Opt. 21 – Camera Measurements
  - Opt. 30 – Component Measurements
  - Opt. 40 – Audio Measurements
  - Opt. 41 – Three Stereo Audio Inputs
  - Opt. 42 – Audio to Video Delay Measurement
  - Opt. 48 – GPIB Interface
  - Opt. 74 – White Phosphor CRT
  - Opt. 1C – Cabinet Version
  - Opt. 1P – Printer (110 V only)
  - Opt. 1Z – Probe Adapter



VM 700A

### VM 700A Video Measurement Set
- Many capabilities in one instrument
  - Digital waveform monitor
  - Digital vectorscope
  - Group delay and frequency response
  - Noise measurement set
  - Automatic measurement set
- Auto Mode
  - Unattended monitoring of NTSC or PAL video signals from studios, STLs, earth stations, and transmitters
  - User-specified limits
- Remote control operation
- Automatic measurement of short duration audio test sequence
- Measure frequency response, distortion, phase, crosstalk, and other important audio parameters
- Measure mode provides graphic display of measurements
  - K factor
  - Differential gain and phase
  - Chrominance to luminance delay
  - Noise spectrum
  - Group delay with (Sin x)/x
  - Color bars
  - Relative-to-reference on most measurements
- Three input channels
- Averaging on most measurement modes
- Picture mode for source ID
- Hardcopy for analysis and documentation
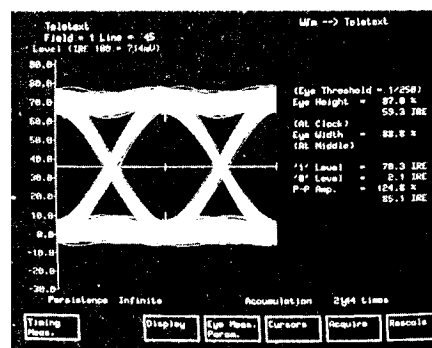


### VM 700A Option 20 Teletext Measurements
- Provides numerical results
  - Eye height
  - Start of data code
  - Eye width
  - Number of run-in bits
  - Data levels (logical "0" and logical "1" levels)
- Provides graphical displays
  - Eye height with variable persistence
  - Eye height with grading
  - Amplitude histogram
  - Teletext timing
- Multiple clock frequencies
  5.727272 MHz for System M (NTSC)
  6.9375 MHz for System B/G/I (PAL)
- Cursors for manual measurements
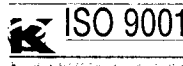
# Video Measurement Sets
## Component Measurements • AVTIME
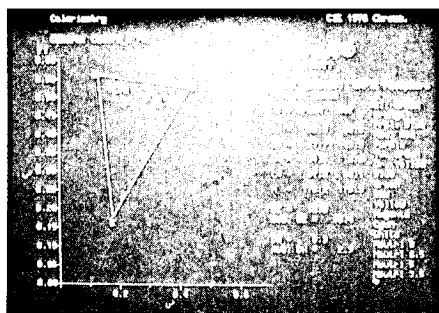


*VM 700A Option 21.*

### VM 700A Option 21 Camera Measurements
- Significantly simplifies key measurements of camera performance
- Compatible with NTSC or PAL cameras
- Automates pre-purchase evaluation and comparison of cameras
- Reduces time spent on acceptance testing, routine maintenance and operational adjustments
- Uses industry standard charts
- Camera matching simplified with relative-to-reference mode
- Ten key measurements:
  - Colorimetry
  - Vertical Smear
  - Gamma
  - Fixed Pattern Noise
  - Frequency Response
  - CDD Defects
  - Shading
  - Detail
  - Geometry/Registration
  - Frequency Response with Aliasing

### VM 700A Option 30
### Component Measurements
- Provides numerical results for:
  - Relative timing of B-Y and R-Y
  - Relative amplitude of B-Y and R-Y
  - Peak to peak amplitude for B-Y and R-Y
  - Peak white amplitude
- Compatible with SMPTE/EBU, Sony Betacam®, and MII Formats
- Numerical results in all measurements
- Level meter displays amplitude of all three channels simultaneously
- Configurable for Y/R-Y/B-Y or GBR formats
- Full complement of component analog video measurements and displays
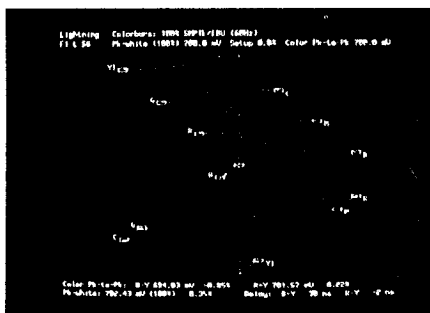


*VM 700A Option 30.*

### VM 700A Option 40/41
- Automatic measurement of short duration audio test sequence
- Combined video and audio performance reports
- Real-time spectral response
- Real-time multitone analyzer
- Stereo audio input
  - Single (Option 40)
  - Three (Option 41)
- Measure frequency response, distortion, phase, crosstalk, and other audio parameters

### VM 700A Option 42
### Audio to Video Delay Measurement
Option 42 provides the VM 700A with the capability to measure the timing difference between the audio and video portions of a program. The measurement is designed to operate with a Tektronix VITS 200 NTSC VITS Inserter or VITS 201 PAL VITS Inserter, and a Tektronix ASG 140 Audio Signal Generator.
- Measures audio to video delay of transmission paths
- Operates in both NTSC and PAL video standards
- Measures audio to video delay of up to 120 video frames
- Easy to read graphic display

### AVTIME
### Audio to Video Delay Measurement Package
Complete audio to video time delay measurement package including VM 700A with Option 40 audio measurement hardware, audio to video delay measurement Option 42, a VITS 200 Series Inserter, and an ASG 140 Audio Signal Generator.

### VM 700A Software

### VMBKUP Backup and Remote Control Software
- Backup or restore sets of measurement configuration files, reference measurement files and function key definitions
- Perform individual file and directory operations on both the connected personal computer and VM 700A
- Use to restore backed up files to VM 700A after upgrade
- Control the VM 700A from a PC
- Use Serial Line Internet Protocol (SLIP) for data transfer over RS-232C connection

### VMT Remote Control Software
- Controls the VM 700 or VM 700A
- Pull down/pop up menus simplify operation
- Conditional testing of incoming data
- PC based functions
- Text and graphics capture
- Adapts to VM 700A and its options

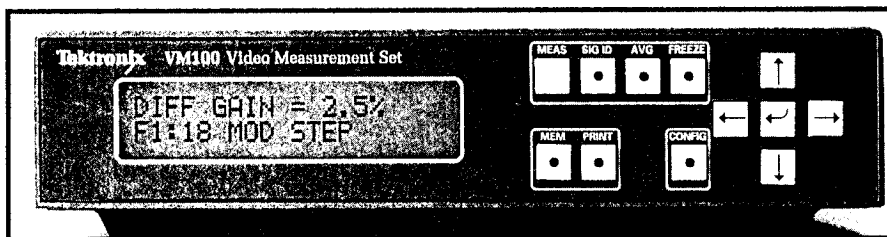### VMREMGR Remote Graphics Software
- Display VM 700A graphics on a remote PC
- Perform front panel operations via mouse
- Issue remote commands
- Terminal operations

# Automatic & Analog Video Measurement Sets
## 1780R/1781R • New VM100

### VM100
- Automatically Measures 12 Key NTSC Video Parameters:
  - Differential Gain
  - Differential Phase
  - Chrominance to Luminance Gain
  - Chrominance to Luminance Phase
  - Frequency Response
  - 2T K-Factor
  - Hum
  - Signal to Noise
  - Group Delay
  - Bar Amplitude
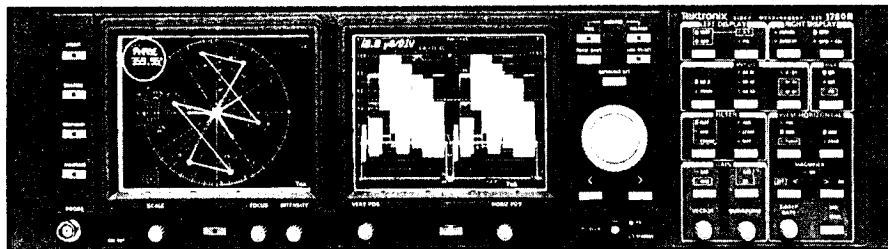  - Sync Amplitude
  - Burst Amplitude

### 1780R/1781R
- Analog Waveform and Vector Displays
- Touch Screen Control
- 20 MHz Signal Bandwidth
- Bright Line Select
- On-screen Prompts Guide User Through Key Video Performance Measurements

**VM100 Low Cost Automatic Video Measurement Set**
- Verifies compliance with new FCC cable TV regulations
- Automatic "Signal ID"
- Fast, accurate measurements at a touch of a button
- Average Mode for accurate results in low signal to noise
- Freeze Mode suspends testing to view intermediate results
- RS-232C port for remote access or local printer output
- Simple and intuitive interface
- Internal memory for storage of measurement results
- Internal time clock for dating measurement results

**1780R/1781R Video Measurement Sets**
- Full bandwidth analog processing
- Precision waveform/vector measurements
- Polar SCH presentation with calibration mode
- Four loop-through video input channels
- Component or composite waveform evaluation
- Measurement-grade time/voltage cursors
- Precision differential phase/differential gain measurements even with noisy signals
- Stereo audio phase and amplitude display
- User definable semi-automatic setups
- Available for either NTSC or PAL standards

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## ORDERING INFORMATION

**VM 700A**
Video Measurement Set.
- **Opt. 01** – NTSC Measurements.
- **Opt. 11** – PAL Measurements.
- **Opt. 20** – Teletext Measurements.
- **Opt. 21** – Camera Measurements.
- **Opt. 30** – Component Measurements.
- **Opt. 40** – Audio Measurements.
- **Opt. 41** – Three Stereo Audio Inputs.
- **Opt. 42** – Audio to Video Delay Measurement.
- **Opt. 48** – GPIB Interface.
- **Opt. 74** – White Phosphor CRT.
- **Opt. 1C** – Cabinet Version.
- **Opt. 1P** – Printer Version (110 V only).
- **Opt. 1Z** – Probe Adapter (067-1429-00).

**AVTIME** – Audio to Video Delay Measurement Package
- **Opt. 01** – NTSC System with an ASG 140.
- **Opt. 02** – NTSC System with an ASG 100 in place of an ASG 140.
- **Opt. 11** – PAL System with an ASG 140.
- **Opt. 12** – PAL System with an ASG 100 in place of an ASG 140.

**VMBKUP** – VM 700A Backup and Remote Control Software.
**VMREMGR** – VM 700A Remote Graphics Software.
**VMT** – VM 700A Remote Control Software.
**VM 100** – Automatic Video Measurement Set.
**1780R (NTSC)/1781R (PAL)** – Video Measurement Sets.
**1780F02** – Portable Carrying Case for 1780R/1781R.
**1780F05** – Rackmount Shelf.