

Troubleshooting

WFM2200A and WFM2300 Video and Audio Capabilities

This portable waveform monitor provides an array of basic monitoring tools for video (SD, HD, Dual Link and optional 3G), and audio (Embedded, AES) monitoring that can be configured in Full and Quad Tile display to allow you to see all the necessary signal information at a glance. ANC Data Inspector, Data list and closed caption decode are invaluable for troubleshooting problems within the ancillary data space. A video and audio generator aids in fault finding signals problems and an external reference waveform display can assist in ensuring correct video timing along with the Tektronix patented Timing display. A range of options and accessories expand the versatility of the WFM2200A & WFM2300 for field operations including a new optical input for SMPTE 297 SDI signals.



Content Verification

- Comprehensive overview of the video content and alarm status
- Tektronix-patented Diamond, Split Diamond, and Arrowhead displays simplify the process of verifying gamut compliance and are ideal for colorists, editors, and operators to visualize whether the content is RGB or Composite Gamut compliant with a single glance.
- MULTI input can be configured as SDI, AES or LTC input. Just connect an unknown cable and determine the signal type



Audio Monitoring

- Up to 16 channel Embedded AES/EBU Audio
- Multichannel Surround Sound1 Display and Flexible Lissajous Display
- Audio Loudness meter (Option LOUD)
- Dolby metadata decode and peak level metering (Option DBE)
- Dolby E Guard Band meter with user-defined limits (Option DBE)
- AES Audio Test Tone Generator for Embedded and AES Output



Data Monitoring

- Simultaneous CEA708/608 Closed Caption monitoring; Teletext and OP47 subtitle monitoring
- Detect and decode ANC data including AFD, WSS, Video Index,
- TSID, V-Chip, Broadcast Flag/CGMS-A, VITC, LTC, and ANC TC
- ARIB STD-B35/B37/B39, TR-B22, and TR-B23 support
- ANC Data Inspector and SDI Data Analysis display helps troubleshoot ANC data and SDI data problems

Troubleshooting

WFM2300 Physical Layer Test

The WFM2300 waveform monitor is an ideal tool for field applications offering physical layer measurements (Eye & Jitter), cable simulation and margin test capabilities all in one portable instrument. In addition, the WFM2300 provides an array of basic video / audio monitoring tools with test signal generation features supporting a wide range of interfaces (SDI - SD / HD / Dual Link / optional 3G, optional optical SFP interface, discrete AES/EBU, LTC, Composite Sync) to quickly isolate, diagnose and resolve system issues and enable effective setup. A range of accessories expand the versatility of the WFM2300 for field operations.



Signal Generation

- Generate a 100% or 75% color bars along with pathological test signals with the ability to Genlock the test signal output to the External Reference Input.
- Audio test tones can be generated at the AES output or embedded in the SDI test signal output.
- Change the test signal patterns, video format, whether the test signal is moving or static, audio test tone, and audio level.
- The moving circle allows the user to easily identify whether the test signal is active “live” or still and helps determine problems within the signal path that have been caused by equipment freezing on the last frame.



Stress Testing

- The STRESS LOOP connectors are a bi-directional passive signal path that can be used with a SDI test signal generated by the WFM2300 to test a signal path, or to add an additional cable length and interfering signal to a signal path to provide simple margin testing.
- The cable stress/margin loop adds an additional 20 meters of cable and an interfering signal to the signal path. The use of the stress/margin loop along with CRC detection simplifies how to determine the cable margin of a system so that the user can quickly ensure they do not reach the “digital cliff” where the transmission error rate significantly increases.

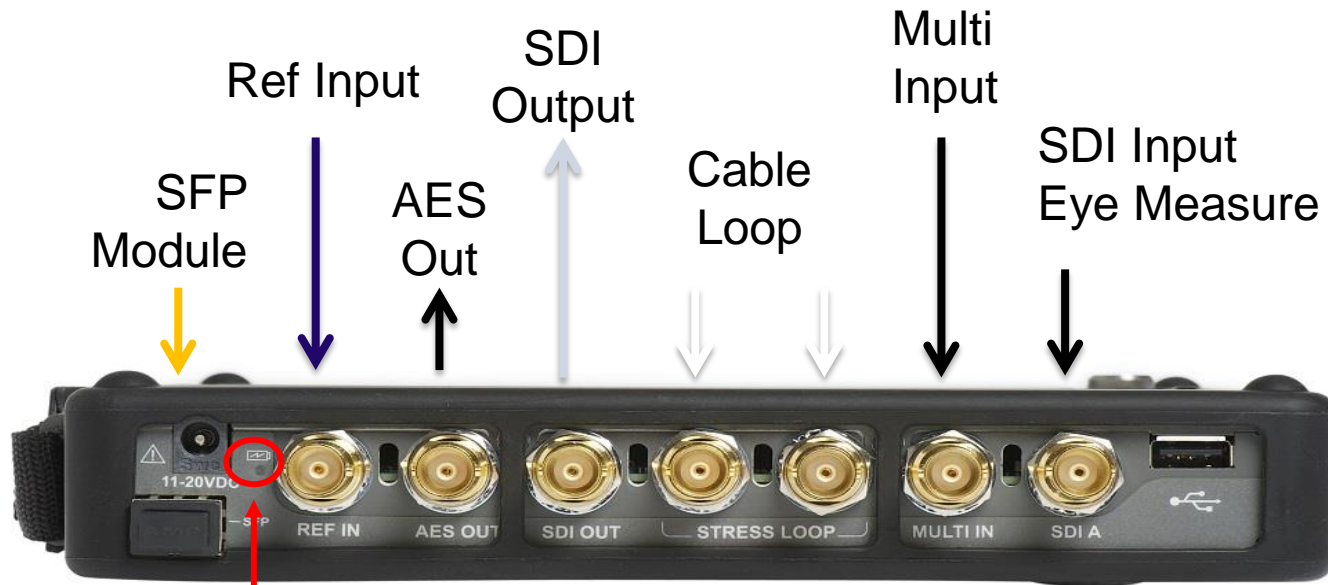


Physical Layer Testing

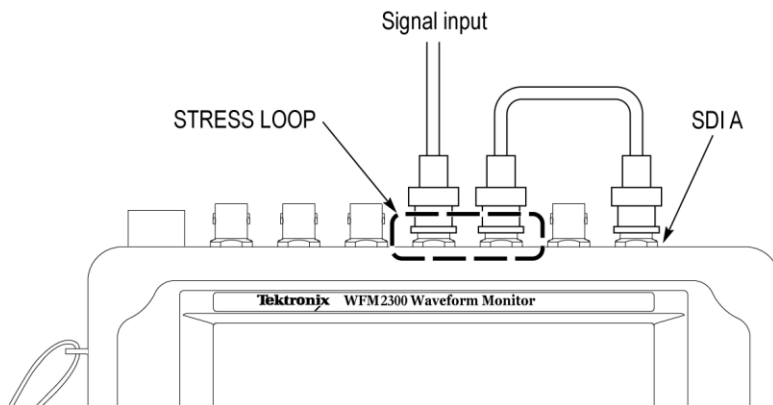
- **3G (option 3G) /HD/SD Color Bar and Pathological Signal Generator:** Genlock to External reference input; Moving Picture / Circle; Coax cable and Optical interface (Option SFP)
- **Eye / Jitter Measurements:** Coax SDI Eye pattern measurement including eye amplitude, rise/fall time and overshoot measurements as well as Tektronix jitter waveform display
- **Coaxial Cable simulation / Cable margin test loop:** To ensure the health of the input signal. Use with CRC Error count; to ensure the receiver device with margin to decode correctly

WFM2200A and WFM2300 Compact Waveform Monitors

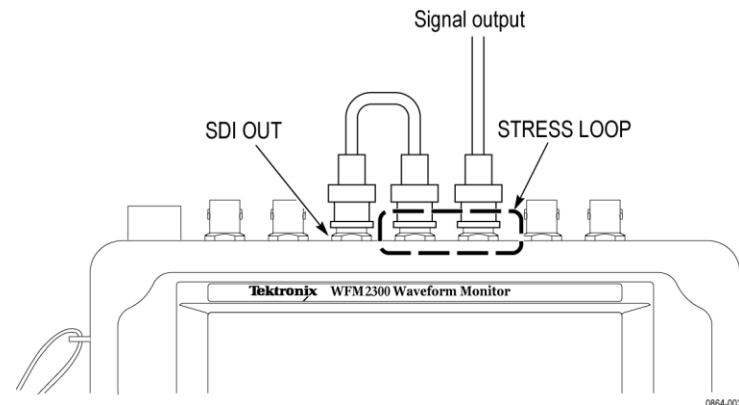
Top Panel



Battery Charging
LED



Stress loop connections for a monitored signal.



Stress loop connections for a generated signal

0864-002

WFM2300 / WFM2200A

Comparison Chart

Capability	Tektronix WFM2200	Tektronix WFM2200A	Tektronix WFM2300
SD / HD	Yes	Yes	Yes
3G	Yes (op 3G)	Yes (op 3G)	Yes (op 3G)
Dual Link HD	Yes	Yes	Yes
Optical	No	Yes (op SFP)	Yes (op SFP)
AES / EBU	Yes	Yes	Yes
LTC	Yes	Yes	Yes
Ext Reference	Yes	Yes	Yes
Eye Display	No	No	Yes
Jitter Display	No	No	Yes
Cable length	No	Yes	Yes
Cable simulation	No	Yes	Yes
Cable interference signal insertion	No	No	Yes
Active Picture CRC	Yes	Yes	Yes
Audio: Bars	Yes	Yes	Yes
Audio: Loudness Meter	No	Yes (op LOUD)	Yes (op LOUD)
Audio: Dolby E	No	Yes (op DBE)	Yes (op DBE)

WFM2300 / WFM2200A

Comparison Chart

Capability	Tektronix WFM2200	Tektronix WFM2200A	Tektronix WFM2300
Ext Ref/LTC Waveform display	Yes	Yes	Yes
ANC Data Monitor	Yes (op DATA)	Yes (op DATA)	Yes (op DATA)
Time code Closed Caption	Yes	Yes	Yes
Generator: Format	Basic	Basic	Basic
Generator: Test Patterns	ColorBar, Pathological	ColorBar, Pathological	ColorBar, Pathological
Generator: Dolby E	No	No	No
Generator: Text ID	No	No	No
Generator: Genlock	Yes	Yes	Yes
Replaceable Battery	Yes	Yes	Yes
Remote Control	Yes (SNMP)	Yes (SNMP)	Yes (SNMP)
Display	6.5" 1024x768	6.5" 1024x768	6.5" 1024x768
4 tile Mode	Yes	Yes	Yes
Form factor	Portable	Portable	Portable

WFM2200A & WFM2300 Compact Waveform Monitors

Key Specifications and Ordering Information

Ordering Information	
WFM2200A	3G/HD/SD-SDI Waveform Monitor
WFM2300	3G/HD/SD-SDI Waveform Monitor. Includes Jitter Measurements, EYE Pattern Display and EYE Pattern Automated Measurements
3G	Add support for 3G-SDI signal formats (Level A and Level B)
DATA	Add Ancillary Data monitoring (including decoding of 708 and 608 Closed Captions, Teletext and OP47 Subtitles, AFD, and CGMS-A), ANC Data Inspector, and advanced Data Analysis capabilities
DBE	Dolby E meta data monitor
LOUD	Audio Loudness Meter
SFP	3G SDI optical interface

Physical Characteristics (WFM 2200A)			
Weight	Height	Width	Depth
1.5 kg	133 mm	233 mm	140 mm
3.3 lbs	5.25 in.	8 3/8 in.	5 1/2 in.

Accessories	
WFM200BA	Rechargeable battery pack for replacement
WFM200BC	External Battery Recharge Unit
WFM200FSC	Soft Carrying Case for WFM2200



WFM200BA



WFM200BC



WFM200FSC

Key Applications	Benefits
Installation & Maintenance	Physical layer testing and connectivity to a variety of sources and equipment.
ENG & Mobile Applications	Light-weight, short-depth, battery-power capable with built-in color bar and pathological signal generation capability for quick setup and troubleshooting
Facility Timing	Tektronix patented Timing display simplifies Video timing of SDI signal to analog reference. With ability to view waveform display of analog reference to aid in troubleshooting timing problems
Signal Quality Verification	Quickly see at a glance the status of the signal with a variety of waveform, status and picture display using Quad Tile.
Troubleshoot ANC Data problems	ANC Data Inspector allows the user to see all ANC Data packets present within the signal.

Service Option Description	
C3	Calibration Service 3 Years
C5	Calibration Service 5 Years
G3	Complete Care 3 Years
G5	Complete Care 5 Years
R3	Repair Service 3 Years
R5	Repair Service 5 Years