ShibaSoku®

VN31AX

TELEVISION INSTRUMENTS

NTSC/PAL COLOR VIDEO NOISE METER

General

The VN31AX is a single-unit color video noise meter for measuring video luminance noise, chroma AM noise, and chroma PM noise of both NTSC and PAL video signals. The input signal is continuously analyzed, and the NTSC or PAL circuitry is automatically selected and indicated via front panel LEDs. Aside from full-field noise measurements, the VN31AX is capable of either odd-field or even-field measurements. The measurement window function allows the user to select rectangular measurement windows ranging from a 4-μs line segment to a full field.
Up to now, noise measurements have required full-field uniform white or one-color signals. With the VN31AX, luminance and chrominance noise measurements can be performed on any signal containing merely a small uniform white area and a small one-color area. For example, when a color bar pattern is displayed, the user-defined video luminance window can be positioned anywhere on the uniform white area for video luminance noise measurements, and the user-defined chrominance noise window can be positioned anywhere on the red area for chrominance noise measurements.
Furthermore, the VN31AX provides Automatic Level Control (ALC) for stable input levels, and automatic sag compensation for uniform input signals.
Additional features include user-defined judgment ranges for GO/NG evaluations, character displays indicating present operations and warning messages, and automatic memory for quick and easy one-touch video luminance noise and chroma AM/PM noise measurements.

Features

- Automatic selection of NTSC or PAL systems.
- One device for luminance and chroma AM/PM noise measurements.
- World's first "Any-Size, Anywhere" measurement window.
- One-touch measurements via pre-programmed noise mode keys.
- Automatic Level Control (ALC) for stable input levels.
- Automatic sag compensation function for uniform input signals.
- User-defined judgment ranges for GO/NG evaluations.

Specifications

- Noise level measurement range
  - Video luminance noise
    -7 to -87 dB (Vrms/Vp-p)
  - Video chrominance AM/PM noise
    -17 to -77 dB (Vrms/Vp-p)
- Noise measurment accuracy
  - Video luminance noise
    (HPF = 100 kHz, LPF = 4.2 MHz or 5 MHz)
    ±0.25 dB, -7 to -60 dB
    ±0.50 dB, -60 to -70 dB
    ±0.75 dB, -70 to -75 dB
    ±1.50 dB, -75 to -80 dB
  - Video chrominance AM/PM noise
    (HPF = 100 kHz, LPF = 1 MHz)
    ±0.25 dB, - 7 to - 50 dB
    ±0.50 dB, - 50 to - 60 dB
    ±0.75 dB, - 60 to -75 dB
  - Note: The above accuracy figures are for full-field noise measurements. When the measurement window size decreases, an additional error factor must be added to these figures: maximum ±0.2 dB.
- Frequency range
  - Video luminance noise
    10 Hz to 10 MHz
  - Video chrominance noise
    NTSC: 3.58 HMz ±1 MHz
    PAL : 4.43 HMz ±1 MHz
- Monitor outputs
  - Output impedance
    75 Ω
  - Connector type BNC, unbalanced
  - Output level Approx. 1.0 Vp-p
- Noise outputs
  - Output impedance
    75 Ω
  - Connector type BNC, unbalanced
  - Output level Max. 0.5 Vp-p
- Trigger output
  - Output impedance
    1 kΩ
  - Connector type BNC, balanced
  - Output level TTL level

●General specifications

Power supply	AC 100, 120, 220, 240 V (selectable) ±10%, 50/60 Hz
Power consumption	Approx. 100 VA
Operating temperature range	0℃ to 40℃
Relative humidity	25% to 90% RH (non-dewing)
Dimensions	426 (W) x 149 (H) x 460 (D) mm
Weight	Approx. 22 kg

Technical Notes

●User-defined measurement windows

- User-defined measurement windows are easily constructed with the front panel rotary dial and the Horizontal, Vertical, Start, and Stop keys.
- Once a user-defined measurement window has been constructed, it can be positioned anywhere on the video screen via the rotary dial and the Move, Horizontal, and Vertical keys.
- When a video signal contains a uniform white or one-color area, the measurement window can be positioned in order to measure the noise in that area of the screen.
- The window function allows the user to select a one-line window as small as 4 μs.
- In addition, a one-line window can be positioned in the vertical blanking interval for noise measurements of the VIT signal.

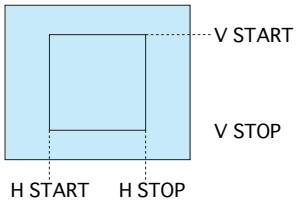


Figure 1 :
Measurement Window Construction

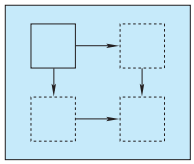


Figure 2 :
Measurement Window Position

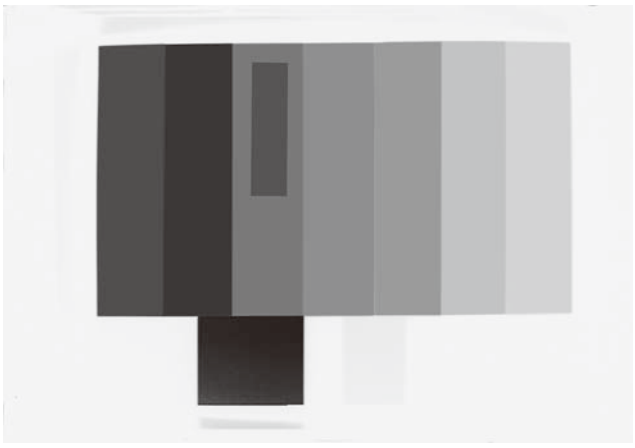


Photo 1: Color bar pattern and measurement window

Photo 2: 4 μs line segment measurement window

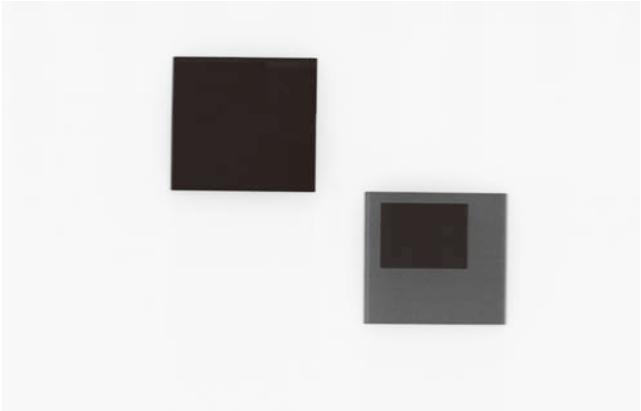


Photo 3: Measurement window positioned in one-color area

Photo 4: One-line measurement window in the vertical blanking interval

Specifications

●ALC — The Automatic input Level Control function corresponds to either the luminance or chrominance signal input. The LUMI and CHROMA LEDs light up in accordance with the NOISE MODE selection. The specific settings for both the Luminance and chrominance ALC selections are listed below:

- Luminance ALC settings

OFF (FIX)	ALC off: fixed gain (0dB)
VARI	10% to 14% levels (rotary dial setting)
STD	50% white level
H REF BAR	100% white level
V REF BAR	100% white level in the VIT signal

- Chrominance ALC settings

OFF (FIX)	ALC off: fixed gain (0dB)
VARI	20% to 140% levels (rotary dial setting)
RED	Red level
100% CHROMA	100% chroma level

Note: The red level conforms with IEC Publication 883.

●FILTERS

- The following high-pass filters are selectable for both the luminance and chrominance noise measurements:

LUMI HPF	CHROMA HPF
10 Hz	100 Hz
100 Hz	1 kHz
1 kHz	10 kHz
10 kHz	100 kHz
100 kHz	200 kHz
200 kHz	

- The following low-pass filters are selectable for luminance noise measurements:

LUMI LPF	
0.5 MHz	R-Y/B-Y inputs
1 MHz	R-Y/B-Y inputs
3 MHz	Luminance noise
4.2 MHz	525-line systems
5 MHz	625-line systems
6 MHz	High-band noise
THRU	Wide-band noise

- The following low-pass filters are selectable for chrominance noise measurements:

CHROMA LPF	
0.5 MHz	Standard filter
1 MHz	Wide-band noise

- Subcarrier trap: The SC TRAP key enables the subcarrier trap. The subcarrier trap is automatically set to 3.58 MHz for NTSC input signals or 4.43 MHz for PAL input signals. The subcarrier trap attenuation is > 25 dB, and the bandwidth at - 3 dB is within fsc ±300 kHz.
- Weighting filter — The WEIGHTING key enables the CCIR Recommendation 567 weighting filter.

●GATE MODE — The following gate modes are available for various measurement windows:

- FF — The width of the full-field is 1/2 H, 1/4 H to both the left and right of the center of the screen. The top of the full-field initiates 10 lines after the vertical blanking, and the bottom of the full-field terminates 10 lines before the vertical blanking.

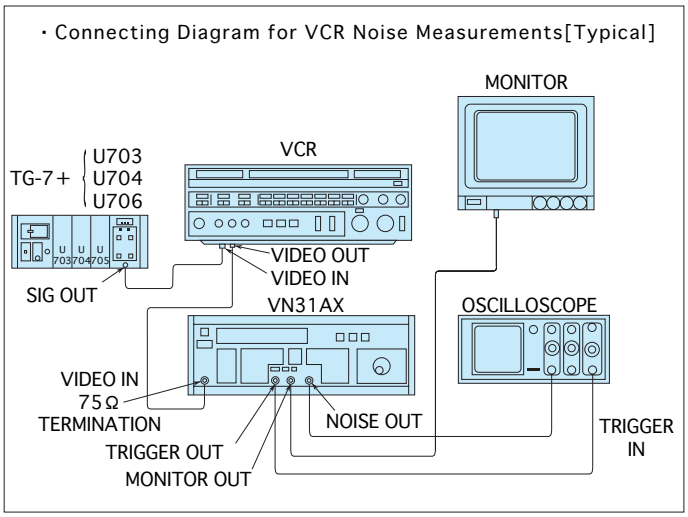
Note: Window adjustments cannot be made in the FF gate mode.

- ODD — This function is used when measuring only the odd fields. The measurement window size and location are user-defined in the ODD gate mode.
- EVEN — This function is used when measuring only the even fields. The measurement window size and location are user-defined in the EVEN gate mode.
- BOTH — This function is used when measuring both the odd fields and even fields. The measurement window size and location are user-defined in the BOTH gate mode.
- VIT — A one-line window can be located in the vertical blanking interval for noise measurements on the VIT signal.

VIT measurement window
One-line/field
VIT window position
Line 17 (variable via rotary dial)
VIT window size 1/2 H (variable via rotary dial)

Note: The user-defined window will remain the same size and in the same position when switching between the ODD, EVEN, and BOTH modes. This feature allows the operator to quickly measure the odd field, even field, or both fields of one desired area of the video signal.

- Connecting Diagram for VCR Noise Measurements[Typical]



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