

# Checks Bottom Level and Magnitude of LCD Panel Flicker



## LT 9213A LCD FLICKER CHECKER

### ● GENERAL

The LT 9213A greatly reduces the investment in capital equipment required to adjust and evaluate flicker in LCD and other display panels. Visual methods are difficult, non-repeatable and fatiguing to operators and spectrum analyzer methods are costly and require experienced personnel. Use of the LT 9213A saves space as well, and once set up, provides production speed with fast GO/NO GO judgements. A DC output proportional to the meter reading is provided as well as a TTL output of GO/NO GO finding. The optical sensor is provided.

### ● FEATURES

- Large Equipment Cost Savings as Opposed to Spectrum Analyzer Methods
- Large Indicator Eliminates Operator Fatigue
- Amplitude Compressor Simplifies "Bottom" Adjustment
- Selectable Bandpass Filter Eliminates Noise and Interference and Adapts the Unit to a Wide Range of LCDs
- GO-NO GO Indicators and Judgement Speed Throughput
- DC AGC for Relative Flicker Measurements
- Aids in Evaluating Compliance with VESA 305-5
- Accommodates a Wide Range of Brightness (0.5 to 300 cd/m<sup>2</sup>)

### ● SPECIFICATIONS

**System:** Indication of brightness variation  
Variable frequency bandpass filter provided to select flicker component

**Functions:**

- Input section
  - Abnormal brightness (too bright, too dim) indicator, input level adjustor
  - DC AGC normalizes brightness dispersion.
  - Meter sensitivity adjustor
  - Variable frequency bandpass filter provided to select flicker component
  - Flicker indication compressor (COMPRESSION/ LINEAR, selectable)
  - GO/ NO-GO judgment and output
  - DC output in proportion to the meter indication
  - Flicker waveform monitor output

**Flicker Measurement**

**Measurement Range:** 0 to 30%, 2 ranges  
(RESPONSE: LINEAR, SENSITIVITY: FIX)

**Panel Brightness Range when a provide sensor is used.**

**Switchable LOW/HIGH by BRIGHTNESS RANGE SWITCH on rear panel.**

**LOW:** 0.5 cd/m<sup>2</sup> to 50 cd/m<sup>2</sup>, include Brightness level adjustor

**HIGH:** 30 cd/m<sup>2</sup> to 300 cd/m<sup>2</sup>, include Brightness level adjustor  
The brightness ia measured when the sensor is fully contacted to the LCD panel.

**Brightness Range Indicator:** Indicates abnormal brightness (too bright, too dim)

**Measurement Accuracy:** ±10% of full scale  
(LINEARITY: LINEAR, SENSITIVITY: FIX)

**Sensitivity Adjustor:** 0.3 to 2 times (refer to FIX)

**Meter Indication:** Average responding

**Built-In Filter**

**Variable Filter**

**Type:** Single-resonance bandpass filter

**Center Frequency:** 20 Hz to 150 Hz, variable

**Selectivity:** Q=3  
\*Typical attenuation characteristics:  
20 dB at 60 Hz (20 Hz tuning frequency)

**Frequency Response (30 Hz ref.)**

**20 Hz to 60 Hz:** ±0.5 dB

**60 Hz to 150 Hz:** ±1 dB

**Fixed Filter**

**Type:** RC low-pass filter, 6 dB/oct

**Attenuation:** -3 dB at 400 Hz

**DC Output**

**Output Signal:** Proportion to meter indication

**Output Voltage:** 1 V±50 mV at full scale, into open

**Output Resistance:** 1 kΩ approx

**Connecting cable length:** ≤ 10 m

**Accessory Sensor**

**Type:** Silicon photodiode

**Model:** S2281-01(manufactured by Hamamatsu Photonics K.K.)

**Connecting cable length:** ≤ 3 m

**Monitor Output**

**Output Signal:** Flicker component normalized by DC AGC

**Output Voltage:** 0.1 Vp-p/% approx.

**Output Resistance:** 600 Ω approx

**Connecting cable length:** ≤ 10 m

**GO/ NO-GO Function**

**Method:** Preset on the meter

**Setting:** Judgement value in preset mode

**Indicator:** LED (GO: Green, NO-GO: Red)

**Output:** TTL level, fun out: 1  
GO: LO, NO-GO or not judged: HI

**Connecting cable length:** ≤ 10 m

**Power Requirements:** 100 V/ 115 V/ 230 V ±10 % (250 V max.),  
50/60 Hz 7 W MAX.

**Environmental Conditions**

**Operating Temperature Range:** 0 to 40°C

**Operating Humidity Range:** ≤ 80% RH (without condensation)

**Spec-Guaranteed Temperature Range:** 10 to 35°C

**Spec-Guaranteed Humidity Range:** ≤ 80% RH (without condensation)

**Dimensions & Weight:** 132 (W) x 148 (H) x 250 (D) mm, 2.4 kg

**Accessories:**

- Sensor ..... 1
- BNC - BNC cable ..... 1
- Power cord ..... 1
- Instruction manual ..... 1