

MICROVISION

RTM-2: SS400 Series Response Time Module

APPLICATIONS

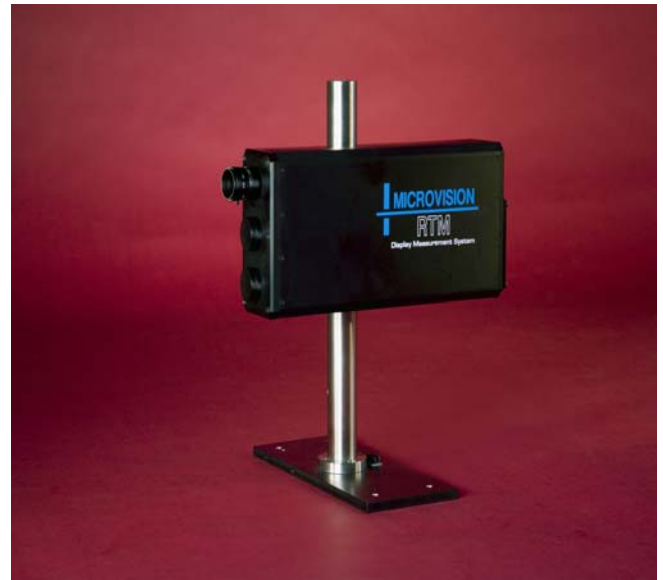
- LCD Televisions and Monitors
- PDP Displays
- 3D Glasses

MEASUREMENTS

- Motion Blur & Artifacts
- MPRT
- Response Time & Flicker
- Gray Level Transition Time
- Overshoot Percentage
- Delay Time Response
- Extinction Ratio (3D displays)

FEATURES

- Turnkey system - System Controller Included
- Fully Automatic
- Customizable Setup
- Proprietary Filtering Techniques for Increased Accuracy
- Large Dynamic Range (no ND filters needed)
- Data includes text files, .csv files, 2D and 3D plots
- BNC connection for raw data (to oscilloscope)



RTM-2 Unit on Stand

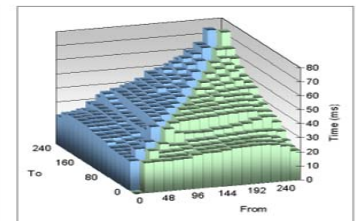
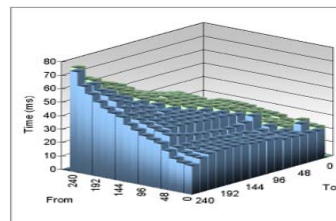
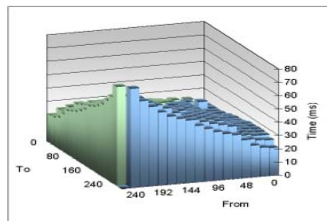
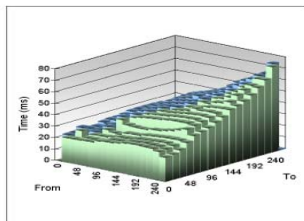
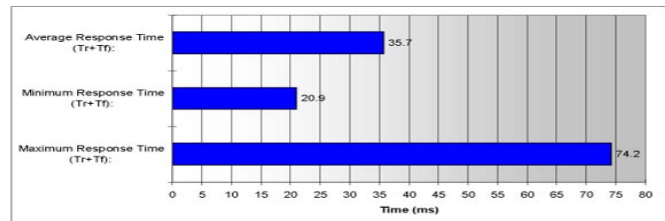
Gray Level Transition Spreadsheet

| | | | |
|---|---|---|---|
| Manufacturer: Model No.: Serial No.: Rev. No.: | Diagonal Size: Active Size (H): Active Size (V): Pixels: Technology: | Test Target Location: Warm-up Time: Ambient Temperature: Test Person: Test Date: | Gray Level Response Time Rise+Fall |
|---|---|---|---|

| Gray Level | Gray Level | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|--|--|--|--|--|--|--|--|
| | 0 | 16 | 32 | 48 | 64 | 80 | 96 | 112 | 128 | 144 | 160 | 176 | 192 | 208 | 224 | 240 | 255 | | | | | | | | |
| 0 | 21.1 | 21.4 | 21.2 | 21.7 | 21.7 | 23.7 | 24.5 | 24.6 | 25.2 | 26.4 | 26.7 | 26.8 | 26.7 | 26.3 | 24.7 | 20.9 | | | | | | | | | |
| 16 | 21.1 | 26.9 | 21.6 | 21.6 | 21.8 | 22.5 | 24.5 | 24.6 | 25.3 | 25.4 | 26.8 | 27.2 | 26.9 | 26.5 | 25.2 | 21.7 | | | | | | | | | |
| 32 | 21.4 | 26.9 | 22.5 | 22.7 | 22.9 | 23.7 | 25.0 | 25.2 | 25.7 | 26.7 | 27.0 | 27.3 | 27.7 | 27.6 | 26.5 | 23.8 | | | | | | | | | |
| 48 | 21.2 | 21.6 | 22.5 | 26.5 | 24.8 | 24.4 | 26.4 | 26.7 | 27.0 | 28.0 | 28.5 | 29.0 | 29.3 | 29.5 | 29.4 | 26.5 | | | | | | | | | |
| 64 | 21.7 | 21.6 | 22.7 | 26.5 | 34.6 | 31.0 | 30.3 | 30.1 | 30.2 | 31.2 | 31.6 | 32.6 | 33.7 | 35.5 | 37.3 | 32.9 | | | | | | | | | |
| 80 | 21.7 | 21.8 | 22.9 | 24.8 | 34.6 | 35.9 | 37.0 | 37.6 | 38.1 | 38.4 | 39.1 | 39.5 | 39.8 | 39.9 | 38.9 | 34.5 | | | | | | | | | |
| 96 | 23.7 | 22.5 | 23.7 | 24.4 | 31.0 | 35.9 | 36.2 | 36.9 | 39.5 | 39.6 | 40.6 | 41.0 | 41.3 | 41.4 | 40.5 | 36.4 | | | | | | | | | |
| 112 | 24.5 | 24.5 | 25.0 | 26.4 | 30.3 | 37.0 | 36.2 | 40.3 | 40.3 | 40.9 | 41.4 | 42.3 | 42.9 | 43.1 | 42.5 | 39.3 | | | | | | | | | |
| 128 | 24.6 | 24.8 | 25.2 | 26.7 | 30.1 | 37.6 | 38.9 | 40.3 | 40.6 | 41.6 | 42.2 | 45.3 | 44.3 | 44.7 | 44.5 | 42.2 | | | | | | | | | |
| 144 | 25.2 | 25.3 | 25.7 | 27.0 | 30.2 | 38.1 | 39.5 | 40.3 | 40.6 | 42.9 | 43.4 | 44.4 | 45.9 | 46.4 | 46.9 | 46.9 | | | | | | | | | |
| 160 | 26.4 | 26.4 | 26.7 | 28.0 | 31.2 | 38.4 | 39.9 | 40.9 | 41.6 | 42.9 | 46.5 | 46.0 | 48.1 | 48.9 | 51.0 | 48.6 | | | | | | | | | |
| 176 | 26.7 | 26.8 | 27.0 | 28.5 | 31.6 | 39.1 | 40.6 | 41.4 | 42.2 | 43.4 | 46.5 | 49.0 | 49.8 | 52.3 | 55.1 | 51.1 | | | | | | | | | |
| 192 | 26.8 | 27.2 | 27.3 | 29.0 | 32.6 | 39.5 | 41.0 | 42.3 | 45.3 | 44.4 | 46.0 | 49.0 | 52.6 | 55.4 | 57.9 | 54.7 | | | | | | | | | |
| 208 | 26.7 | 26.9 | 27.7 | 29.3 | 33.7 | 39.8 | 41.3 | 42.9 | 44.3 | 45.9 | 45.1 | 49.8 | 52.6 | 57.6 | 60.3 | 59.5 | | | | | | | | | |
| 224 | 26.3 | 26.5 | 27.6 | 29.5 | 35.5 | 39.9 | 41.4 | 43.1 | 44.7 | 46.4 | 48.9 | 52.3 | 55.4 | 57.6 | 64.3 | 64.4 | | | | | | | | | |
| 240 | 24.7 | 25.2 | 26.5 | 29.4 | 37.3 | 38.9 | 40.5 | 42.5 | 44.5 | 46.9 | 51.0 | 55.1 | 57.9 | 60.3 | 64.3 | 74.2 | | | | | | | | | |
| 255 | 20.9 | 21.7 | 23.8 | 26.5 | 32.9 | 34.5 | 36.4 | 39.3 | 42.2 | 46.9 | 48.6 | 51.1 | 54.7 | 59.5 | 64.4 | 74.2 | | | | | | | | | |

Maximum Response Time (Tr+Tf) 74.2
 Minimum Response Time (Tr+Tf) 20.9
 Average Response Time (Tr+Tf) 35.7

Rise+Fall Time
 Rise+Fall Time



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SYSTEM OVERVIEW:

The RTM module is an optional test module that can be integrated into any Microvision SS400 Series System. The RTM module can also be purchased as a stand-alone device including a computer, Microvision's proprietary software and Win' 7 platform.

The RTM sensor consists of a variable focus/aperture lens system imaged onto a low noise, fast response photodiode. The photodiode output is filtered and then input into a 16 bit AD card with a variable sample rate.

The response time function is designed to measure Rise (Ton) and Fall (Toff) times of a blinking target as specified in ISO-13406-2 and VESA FPDM 2.0, section 305-1. Please refer to these documents for the specification requirements and (especially in the FPDM document) notes on the general Response Time Measurement procedure.

Also included is an automatic gray level transition time measurement. The response time module can measure an array of gray levels automatically from 0 -255.

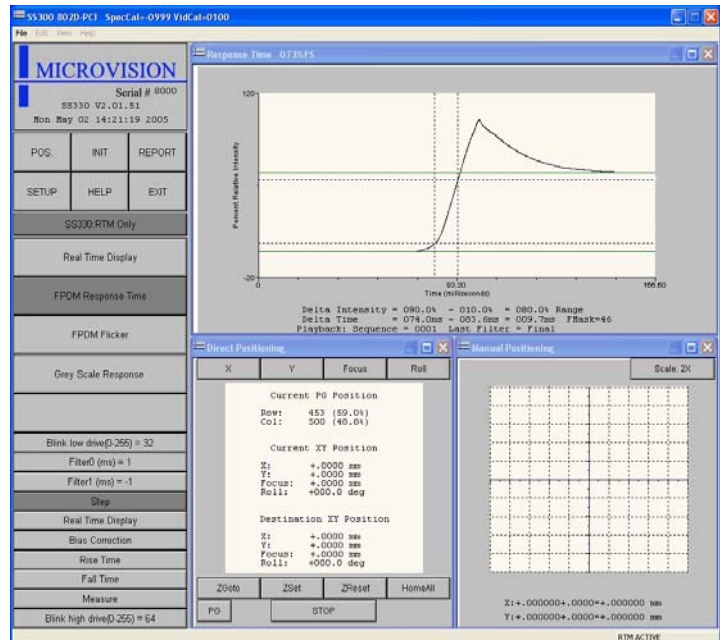
Microvision's newest RTM has added several enhancements to temporal testing including faster sampling and increased sensitivity. Our proprietary filtering algorithms are the most accurate in the testing industry. We have added many new innovative features to response time such as automatic scaling adjustments for maximum sensitivity, overlaid output (raw data and filtered data on same plot to allow the user to observe the effects of the filtering), and faster automated measurements.

The result is the most powerful, flexible and accurate measuring device of temporal performance available.

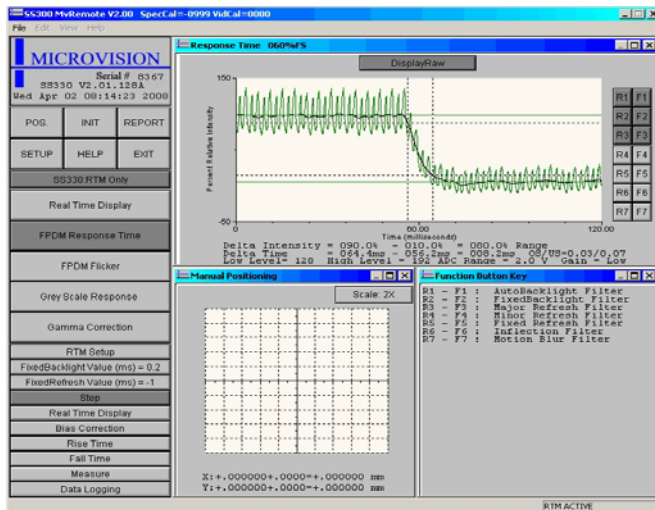
RTM SPECIFICATIONS:

Optical Type: Low Noise, Fast Response Photo Diode
Sample Rate: 50 kHz Max. (500kHz optional)
Resolution: 16 bit
Detector Response: 20kHz (filtered)
Transition Time: Measures .05 ms to 4 s
Lens: 25mm "C" mount, f1.6 to f22 adjustable
Sync: Software and external options
Operating System: PC / Laptop included with Win 7
Repeatability: 3%
Input/Output Interface: USB ADC attached to MV Computer

Specifications are subject to change without notice.



Rise Time with Overshoot



Fall Time(raw and filtered data)

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See www.microvsn.com for a complete list of World Wide Sales Representatives.

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