

## Cursor Readout Analog Oscilloscope



### FEATURES

- \* 100MHz Bandwidth, Dual Channel, Delayed Sweep
- \* Built-In 6 Digit Universal Counter (GOS-6103C)
- \* 10 Sets Memory for Front Panel Setting Save & Recall (GOS-6103/GOS-6103C)
- \* Time Base Auto-range (GOS-6103/GOS-6103C)
- \* Cursor Readout with 7 Measurements
- \* Panel Setup Lock of Digital-Control Functions
- \* Buzzer Alarm
- \* LED Indicators
- \* TV Synchronization
- \* Trigger Signal Output
- \* Z-Axis Modulation Input
- \* SMD Technology, High Stability and Reliability

### GOS-6112/6103/6103C (100 MHz)

### SPECIFICATIONS

|                   |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |          |  |  |      |           |     |     |      |                |          |       |                  |         |        |      |             |          |       |                  |         |        |    |             |       |          |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--|--|------|-----------|-----|-----|------|----------------|----------|-------|------------------|---------|--------|------|-------------|----------|-------|------------------|---------|--------|----|-------------|-------|----------|
| CRT               | Type<br><br>Accelerating Potential<br>Illumination<br>Z-axis input                                                                                                                                                                                                   | 6-inch rectangular type with internal graticule; 0%, 10%, 90% and 100% markers.<br>8 x 10 div (1 div = 1 cm)<br>16 kV approx. (GOS-6103/GOS-6103C), 12kV approx. (GOS-6112)<br>Continuously adjustable (GOS-6103/GOS-6103C)<br>Coupling : DC<br>Sensitivity: 5V or more<br>Maximum input voltage : 30V (DC + AC peak) at 1kHz or less<br>Bandwidth : DC ~ 5 MHz                                                                                                                                                                                                                                                                          |          |  |  |      |           |     |     |      |                |          |       |                  |         |        |      |             |          |       |                  |         |        |    |             |       |          |
| VERTICAL SYSTEM   | Sensitivity<br>Sensitivity Accuracy<br>Vernier Vertical Sensitivity<br>Bandwidth(-3dB)<br>Rise Time<br>Signal Delay<br>Max. Input Voltage<br>Input Coupling<br>Input Impedance<br>Vertical Mode<br>Bandwidth Limited<br>Common-Mode Rejection Ratio<br>Dynamic Range | 2mV~5V/div, 11 step in 1-2-5 sequence<br>≤ 3% (5div at the center of display)<br>Continuously variable to 1/2.5 or less of panel-indicate value<br>DC~100MHz(2mV/div:DC~20MHz)<br>3.5ns (2mV/div:17.5ns)<br>Leading edge can be monitored<br>400V(DC+AC peak) at 1kHz or less<br>AC, DC, GND<br>1MΩ ± 2% // approx. 25pF<br>CH1,CH2,DUAL(CHOP/ALT), ADD, CH2 INV.<br>20MHz<br>50:1 or better at 50kHz<br>8 div at 60MHz; 5div at 100MHz (GOS-6112)<br>8 div at 100MHz (GOS-6103/GOS-6103C)                                                                                                                                               |          |  |  |      |           |     |     |      |                |          |       |                  |         |        |      |             |          |       |                  |         |        |    |             |       |          |
| HORIZONTAL SYSTEM | Horizontal Modes<br>A(main) Sweep Time<br>B(delay) Sweep Time<br>Accuracy<br>Sweep Magnification<br>Hold Off Time<br>Delay Time<br>Delay Jitter<br>Alternate Separation                                                                                              | MAIN(A), ALT, DELAY(B)<br>50ns~0.5s/div, continuously variable (UNCAL)<br>50ns~50ms/div<br>± 3% (± 5% at x 10 MAG)<br>x 10 (maximum sweep time 5nS/div)<br>Variable<br>1μs~5s<br>Better than 1:20000<br>Variable                                                                                                                                                                                                                                                                                                                                                                                                                         |          |  |  |      |           |     |     |      |                |          |       |                  |         |        |      |             |          |       |                  |         |        |    |             |       |          |
| TRIGGER           | Trigger Modes<br>Trigger Source<br>Trigger Coupling<br>Trigger Slope<br><br>Trigger Sensitivity<br><br><br><br><br><br>TV sync<br>Max. External Input Voltage<br>External Input Impedance                                                                            | AUTO, NORM,TV<br>CH1,CH2,LINE,EXT<br>AC,DC,HFR,LFR<br>"+" or "-" polarity or TVsync polarity<br><table><tr><td>Mode</td><td>Frequency</td><td>INT</td><td>EXT</td></tr><tr><td rowspan="2">AUTO</td><td>10 Hz ~ 20 MHz</td><td>0.35 div</td><td>50 mV</td></tr><tr><td>20 MHz ~ 100 MHz</td><td>1.5 div</td><td>150 mV</td></tr><tr><td rowspan="2">NORM</td><td>DC ~ 20 MHz</td><td>0.35 div</td><td>50 mV</td></tr><tr><td>20 MHz ~ 100 MHz</td><td>1.5 div</td><td>150 mV</td></tr><tr><td>TV</td><td>sync signal</td><td>1 div</td><td>200 mVpp</td></tr></table><br>TV-V, TV-H<br>400V(DC+AC peak) at 1kHz<br>1MΩ±5% // approx.25pF |          |  |  | Mode | Frequency | INT | EXT | AUTO | 10 Hz ~ 20 MHz | 0.35 div | 50 mV | 20 MHz ~ 100 MHz | 1.5 div | 150 mV | NORM | DC ~ 20 MHz | 0.35 div | 50 mV | 20 MHz ~ 100 MHz | 1.5 div | 150 mV | TV | sync signal | 1 div | 200 mVpp |
| Mode              | Frequency                                                                                                                                                                                                                                                            | INT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | EXT      |  |  |      |           |     |     |      |                |          |       |                  |         |        |      |             |          |       |                  |         |        |    |             |       |          |
| AUTO              | 10 Hz ~ 20 MHz                                                                                                                                                                                                                                                       | 0.35 div                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 50 mV    |  |  |      |           |     |     |      |                |          |       |                  |         |        |      |             |          |       |                  |         |        |    |             |       |          |
|                   | 20 MHz ~ 100 MHz                                                                                                                                                                                                                                                     | 1.5 div                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 150 mV   |  |  |      |           |     |     |      |                |          |       |                  |         |        |      |             |          |       |                  |         |        |    |             |       |          |
| NORM              | DC ~ 20 MHz                                                                                                                                                                                                                                                          | 0.35 div                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 50 mV    |  |  |      |           |     |     |      |                |          |       |                  |         |        |      |             |          |       |                  |         |        |    |             |       |          |
|                   | 20 MHz ~ 100 MHz                                                                                                                                                                                                                                                     | 1.5 div                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 150 mV   |  |  |      |           |     |     |      |                |          |       |                  |         |        |      |             |          |       |                  |         |        |    |             |       |          |
| TV                | sync signal                                                                                                                                                                                                                                                          | 1 div                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 200 mVpp |  |  |      |           |     |     |      |                |          |       |                  |         |        |      |             |          |       |                  |         |        |    |             |       |          |
| X-Y OPERATION     | Mode<br>Sensitivity Accuracy<br>X-axis Bandwidth<br>Phase Error                                                                                                                                                                                                      | X-axis: selectable CH1, CH2, EXT ; Y-axis: selectable CH1, CH2, CH1 and CH2<br>2mV~5V/div±3% ; EXT : 0.1V/div ± 5%<br>DC~500kHz(-3dB)<br>3° or less from DC~50kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |  |  |      |           |     |     |      |                |          |       |                  |         |        |      |             |          |       |                  |         |        |    |             |       |          |
| OUTPUT SIGNAL     | Trigger Signal Output                                                                                                                                                                                                                                                | Voltage: approx. 25mV/div into 50 Ω : Frequency response : DC ~ 10MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |  |  |      |           |     |     |      |                |          |       |                  |         |        |      |             |          |       |                  |         |        |    |             |       |          |

# Cursor Readout Analog Oscilloscope

A1



**GOS-6112**

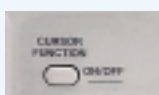


**GOS-6103/6103C**

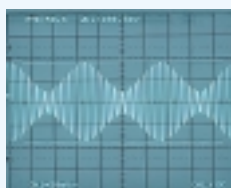
## SPECIFICATIONS

|                                              |                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CURSOR READOUT FUNCTION</b>               | <b>Cursor Measurement Function</b><br><b>Cursor Resolution</b><br><b>Effective Cursor Range</b><br><b>Panel Setting Display</b> | $\Delta V$ , $\Delta V\%$ , $\Delta VdB$ , $\Delta T$ , $1/\Delta T$ , $\Delta T\%$ , $\Delta \theta$<br>1/100 DIV<br>Vertical: $\pm 3div$ ; Horizontal: $\pm 4 div$<br>Vertical: V/div(CH1,CH2),UNCAL,ALT/CHOP/ADD,INV, probe factor,AC/DC/GND<br>Horizontal: s/div(MTB, DTB), UNCAL, x 10MAG, delay time , HO<br>Trigger: source, coupling, slope, level, TV-V, TV-H<br>Others: X-Y, lock, save/recall MEM 0-9 (GOS-6103/GOS-6103C) |
| <b>AUTO MEASUREMENT FUNCTION (GOS-6103C)</b> | <b>Parameter Function</b><br><b>Display Digits</b><br><b>Frequency Range</b><br><b>Accuracy</b><br><b>Measuring Sensitivity</b> | FREQ, PERIOD, $\pm$ WIDTH, $\pm$ DUTY (+ or - polarity selected by trigger slope)<br>Max. 6-digits, decimal<br>50Hz ~ 100MHz<br>1kHz ~ 100MHz : $\pm 0.01\%$ ; 50Hz ~ 1kHz : $\pm 0.05\%$<br>> 2 div (Measuring source selected from CH1 and CH2 as synchronous signal sources)                                                                                                                                                       |
| <b>SPECIAL FUNCTION</b>                      | <b>TIME/DIV Auto Range</b><br><b>Panel Setting Save &amp; Recall</b><br><b>Panel Setups Lock</b>                                | Provided (GOS-6103/GOS-6103C)<br>10 sets (GOS-6103/GOS-6103C)<br>Provided                                                                                                                                                                                                                                                                                                                                                             |
| <b>POWER SOURCE</b>                          |                                                                                                                                 | AC 100V/120V/230V $\pm 10\%$ , 50/60Hz                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>ACCESSORIES</b>                           |                                                                                                                                 | Instruction manual x 1; Power cord x 1; LF-210E Probe (10:1/1:1) x 2                                                                                                                                                                                                                                                                                                                                                                  |
| <b>DIMENSIONS &amp; WEIGHT</b>               |                                                                                                                                 | 310(W) x 150(H) x 455(D) mm ; Approx. 9kg                                                                                                                                                                                                                                                                                                                                                                                             |

## CURSOR MEASUREMENT FUNCTIONS



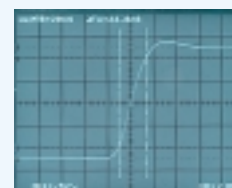
The unique easy-to-use cursor and numerical readouts make waveform observation and measurement easier, faster and more accurate. The on screen cursors provide seven measurement functions ( $\Delta V$ ,  $\Delta V\%$ ,  $\Delta VdB$ ,  $\Delta T$ ,  $1/\Delta T$ ,  $\Delta T\%$ ,  $\Delta \theta$ )



**Voltage Measurement**



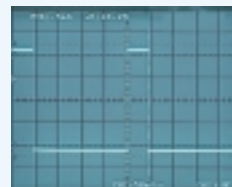
**Voltage percentage Measurement**



**Time Measurement**



**Frequency Measurement**



**Time percentage Measurement**



**Phase Measurement**

## ORDERING INFORMATION

**GOS-6112** 100MHz, 2-channel, Analog Oscilloscope  
**GOS-6103** 100MHz, 2-channel, Analog Oscilloscope  
**GOS-6103C** 100MHz, 2-channel, Analog Oscilloscope with 100MHz Frequency Counter

### Option

**Opt. 01** : GTC-001 Instrument Cart, 450(W) x 430(D) mm  
**Opt. 02** : GTC-002 Instrument Cart, 330(W) x 430(D) mm

NOTE : GOS-6103C Without  $\text{C}$  Approved

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