

# UNIVERSAL SYSTEM

## MS-9150 / MS-9160



### ■ FEATURE

#### ALL-IN-ONE UNIVERSAL SYSTEM

- 2.7GHz Frequency Counter
- 2MHz Function Generator (MS-9150)  
10MHz Function Generator (MS-9160)
- 3 3/4-digit True RMS DMM
- Triple DC Power Supply

### ■ Technical Specification

|  |  |  |              |
|--|--|--|--------------|
| <b>Frequency Counter</b><br>-Measuring range<br>CH A : 1 Hz to 20 MHz LED display depending on gate time and input signal. At least 7 digits are displayed per each second of gate time<br>CH B : 20 MHz to 2.7 GHz<br>-Input Sensitivity<br>CH A : 20 mV RMS Sinewave or 100 mV p<br>CH B : 40 mV RMS Sinewave for 20 MHz to 1.3 GHz or 70 mV RMS Sinewave for 1.3 GHz to 2.7 GHz<br>-Maximum Input Voltage : 3V<br>CH A : 35 mV p-p / CH B : 3 mV p-p<br>-Input Impedance<br>CH A : 1 MΩ / CH B : 50Ω<br>-Time Base : CH A,B Switch Selectable |  | <b>Function Generator</b><br>-Wave forms : Sign, Square, Triangle, Skewed Sine, Ramp, Pulse, TTL Level<br>-Frequency : 0.2 Hz to 2 MHz (MS-9150)<br>1 Hz to 10 MHz (MS-9160)<br>-VCF Voltage Level : 0 to 10V DC<br>-Output Impedance : Selectable 50Ω ±10% / 600Ω ±10%<br>-Output Amplitude : 2Vp-p to 20Vp-p open load<br>1Vp-p to 10Vp-p (50Ω load)<br>-Sign Wave : Distortion Less than 1% (at 1 kHz)<br>Flatness + 0.3dB<br>-Square Wave : Symmetry less than + 3% (at 1 kHz)<br>Rise & Fall Time Less than 150nS (at 1 kHz)<br>-Triangle Wave : Linearity Less than 1% (up to 100 kHz)<br>5% (100 kHz to 20 MHz)<br>-TTL output : Rise & Fall Time - Less than 30ns (at 1 kHz) |              |
| <b>Power Supply</b><br>-3 1/2digit LCD with Back-Light)  |  |  |              |
|  | Terminal1  | Terminal2  | Terminal3    |
| Output Voltage   | 0 - 30V  | 5V Fixed   | 15V Fixed    |
| Output Current   | MS-9150 0 - 2A<br>MS-9160 0 - 3A   | 2A<br>2A   | 1A<br>1A     |
| Ripple   | 1 mV max   | 2 mV max   | 2 mV max     |
| Max. Output Current  | 2A (MS-9150)<br>3A (MS-9160)   | 2.2A<br>2.2A   | 1.2A<br>1.2A |
| Power Source : Line Voltage 110V/120V or 220V/240V AC at 50 Hz ~ 60 Hz   |  |  |              |
| <b>Digital Multimeter</b>  |  |  |              |
| DC Voltage   | 400 mV to 400V (±0.3%+1dgts) / 1000V (±0.5%+1dgts)                                   |  |              |
| AC Voltage   | 400 mV to 400V (±0.8%+3dgts at 40Hz to 400Hz)  |  |              |
| MS-9160 (True-RMS)   | 400 mV to 400V (±2.5%+5dgts at 40Hz to 10KHz)<br>750V (±1.0%+3dgts at 40Hz to 400Hz) |  |              |
| MS-9160 (True-RMS)   | 750V (±1.0%+3dgts at 40Hz to 1KHz)   |  |              |
| DC Current   | 40 mA to 400 mA (±0.8%+3dgts) / 20A (±1.0%+3dgts)                                    |  |              |
| AC Current   | 40 mA to 400 mA (±1.5%+3dgts at 40Hz to 400Hz) / 20A (±2.0%+5dgts at 40Hz to 400Hz)  |  |              |
| MS-9160 (True-RMS)   | 40 mA to 400 mA (±2.0%+3dgts at 40Hz to 10KHz) / 20A (±2.0%+5dgts at 40Hz to 1KHz)   |  |              |
| Resistance   | 400Ω to 4 MΩ (±0.5%+1dgt) / 40 MΩ (±1.0%+2dgt)                                       |  |              |
| Capacitance  | 40 nF to 400 nF (±2.0%+3dgts) / 4 μF to 200 μF (±3.0%+5dgts)                         |  |              |
| Inductance (MS-9160 Only)  | 40mH (±3.0%+20dgts) / 400mH (±3.0%+10dgts)   |  |              |
| Diode (MS-9150 Only)   | Current max. 1 mA at 1 kΩ (forward DC voltage max. 3V)                               |  |              |