

# Data Sheet

## Function Generators Models 4010A & 4011A



### 4010A 2 MHz Function Generator

- 0.2 Hz to 2 MHz
- Sine, Square, Triangle, Pulse & Ramp output
- Variable duty cycle
- Variable DC offset
- Variable amplitude output plus 20 dB attenuator
- 20 Vpp output into open circuit (10 Vpp into 50  $\Omega$ s)
- cUL certified



### 4011A 5 MHz Function Generator

- 0.5 Hz to 5 MHz
- Sine, Square, Triangle, Pulse, & Ramp output
- Coarse and Fine tuning
- 4 digit LED display
- Variable duty cycle
- Variable DC offset
- Variable amplitude output plus 20 dB attenuator
- 20 Vpp output into open circuit (10 Vpp into 50  $\Omega$ s)
- cUL certified



| Specifications               | 4010A                                                                                | 4011A                                            |
|------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------|
| Frequency Characteristics    |                                                                                      |                                                  |
| Waveforms                    | Sine, Square, Triangle, $\pm$ Pulse, $\pm$ Ramp                                      |                                                  |
| Range                        | 0.2 Hz to 2 MHz<br>in 7 ranges                                                       | 0.5 Hz to 5 MHz<br>in 7 ranges                   |
| Resolution                   | NA                                                                                   | 4 digits                                         |
| Tuning Range                 | 10:1<br>Does not apply                                                               | Coarse, 10:1<br>Fine $\pm 5\%$ of coarse setting |
| Variable Duty Cycle          | 15:85:15 cont. variable                                                              | 15:85:15 cont. variable                          |
| Operating Modes              | Normal, VCG                                                                          |                                                  |
| Output Characteristics       |                                                                                      |                                                  |
| Impedance                    | 50 $\Omega$ $\pm 10\%$                                                               |                                                  |
| Level                        | 20 V p-p open circuit, 10 V p-p into 50 $\Omega$                                     |                                                  |
| Amplitude                    | Variable, 20 dB range typical                                                        |                                                  |
| Attenuation                  | -20 dB $\pm 1$ dB                                                                    |                                                  |
| DC Offset                    | Preset $\pm 0.1$ V typ<br>Variable: $\pm 10$ V open-circuit $\pm 5$ into 50 $\Omega$ |                                                  |
| Distortion                   | $\leq 4\%$ @ 1 kHz                                                                   | $\leq 3\%$ @ 1 kHz                               |
| Flatness                     | $\leq 5\%$ (.45 dB)                                                                  |                                                  |
| Symmetry                     | 0.5 Hz to 100 kHz $\leq 2\%$                                                         |                                                  |
| Risetime (Into 50 $\Omega$ ) | $\leq 120$ nS                                                                        | $\leq 20$ nS                                     |
| Linearity                    | $\geq 98\%$ to 100 kHz, $\geq 95\%$ to 2 MHz                                         |                                                  |
| TTL Output                   |                                                                                      |                                                  |
| Level                        | 0.8 V to 2.4 V                                                                       |                                                  |
| Rise Time (0.8 V to 2.9 V)   | $\leq 50$ nS                                                                         | $\leq 20$ nS                                     |
| Duty Cycle                   | 50% typical                                                                          |                                                  |
| CMOS Output                  |                                                                                      |                                                  |
| Maxi. Frequency              | 2 MHz                                                                                |                                                  |
| Level                        | 4 V to 14 V $\pm 0.5$ p-p cont. variable                                             |                                                  |
| Rise Time                    | $\leq 120$ nS                                                                        |                                                  |
| Input VCG                    |                                                                                      |                                                  |
| Input Voltage                | 0-10 V $\pm 1$ V causes a 100:1 frequency change (Typical)                           |                                                  |
| Impedance                    | 10 k $\Omega$ $\pm 5\%$                                                              |                                                  |
| Frequency Counter INT        |                                                                                      |                                                  |
| Accuracy                     | NA                                                                                   | Time base accuracy $\pm 1$ count                 |
| Time Base Accuracy           | NA                                                                                   | $\pm 10$ PPM (23°C $\pm 5^\circ$ C)              |
| General                      |                                                                                      |                                                  |
| Display                      | NA                                                                                   | 4 digit LED                                      |
| AC Input                     | 120/230 VAC $\pm 10\%$ , 50/60 Hz,<br>Internal jumper selectable                     |                                                  |
| Dimensions (H x W x D)       | 4.5" x 11.75" x 10.375", (114 x 298 x 264 mm)                                        |                                                  |
| Weight                       | 4 lbs, (1.8 kg)                                                                      |                                                  |
| Two-Year Warranty            |                                                                                      |                                                  |
| Standard Accessories         | Output cable with BNC to alligator clips, instruction manual, line cord              |                                                  |
| Optional Accessories         | Carrying case (Not included): LC-40, TLFG kit                                        |                                                  |