

# Data Sheet

## 20MHz DDS Sweep Function Generator

### Model 4040DDS



The model 4040DDS is a low cost, full featured Direct Digital Synthesis (DDS) generator with a menu-driven front panel interface that includes a large, easy-to-read graphical LCD display. Waveform parameter changes and data entry can be made using the front panel rotary knob. The unit generates superb quality waveforms with high signal precision and stability. It provides sine & square wave outputs over the frequency range from 0.1 Hz to 20 MHz in one extended range (triangle/ramped wave outputs to 2 MHz). A full range of triggering capabilities is available, including internal-external trigger source and gated modes of operation.

- 20MHz Frequency Range (sine & square only)
- Sine, Square & Triangle
- Modulation in both AM & FM
- Lin or Log Sweep Function
- Adjustable Duty Cycle
- Adjustable DC Offset
- Bright Informative LCD

| Model   | 4040DDS   |
|---|---|
| <b>FREQUENCY CHARACTERISTICS (STANDARD WAVEFORMS)</b> |   |
| Sine  | 0.1Hz to 20MHz  |
| Square  | 0.1Hz to 20MHz  |
| Triangle, Ramp  | 0.1Hz to 2MHz   |
| Accuracy  | 0.01 % (100 ppm)  |
| Resolution  | 4 digits or 10mHz   |
| <b>OUTPUT CHARACTERISTICS</b>                         |   |
| Amplitude Range                                       | 10mV to 10Vp-p into 50Ω   |
| Resolution  | 3 digits (1000 counts)  |
| Amplitude Accuracy                                    | ± 2% ± 20mV of the programmed output from 1.01V- 10V  |
| Flatness  | 0.5 dB at 1MHz, 1 dB to 20 MHz  |
| Offset Range  | ± 4.5V into 50Ω, depending on the Amplitude setting   |
| Offset Resolution                                     | 10 mV with 3 digits resolution  |
| Offset Accuracy                                       | ± 2% ± 10mV into 50Ω  |
| Output Impedance                                      | 50Ω   |
| Output Protection                                     | The instrument output is protected against short circuit or accidental voltage practically available in electronic laboratories, applied to the main output connector |
| <b>WAVEFORM CHARACTERISTICS</b>                       |   |
| Harmonic Distortion                                   | 0-20KHz, -50 dBc, 20KHz-100KHz, -45dBc<br>100KHz-1MHz, -40 dBc, 1MHz-20MHz, -30 dBc   |
| Spurious  | DC-1MHz, <-55 dBc   |
| Square Rise/Fall Time                                 | < 20ns (10% to 90%) at full amplitude into 50Ω  |
| Variable Duty Cycle                                   | 20% to 80% to 2MHz for Square and 10%-90% for Triangle  |
| Symmetry at 50%                                       | < 1 %   |
| <b>OPERATING MODES</b>                                |   |
| Continuous  | Output continuous at programmed parameters.   |
| Triggered   | Output quiescent until triggered by an internal or external trigger, then one waveform cycle is generated to programmed parameters, up to 2MHz                        |
| Gate  | Same as triggered mode, except waveform is executed for the duration of the gate signal. The last cycle started is completed.   |
| Trigger Source  | Trigger source may be internal, external or manual. Internal trigger rate 10us to 10s.  |
| <b>MODULATION CHARACTERISTICS</b>                     |   |
| Amplitude Modulation                                  |   |
| Internal  | Sine signal of 1000Hz<br>Variable modulation from 0% to 100% in 1% steps  |
| External  | 5 Vp-p for 100% modulation, 10KΩ input impedance, DC to 20KHz bandwidth.  |
| Frequency Modulation                                  |   |
| Internal  | Sine signal of 1000Hz   |
| External  | 5 Vp-p for 100% deviation, 10KΩ input impedance, DC to 20KHz bandwidth.   |
| <b>SWEEP CHARACTERISTICS</b>                          |   |
| Sweep Shape   | Linear and Logarithmic, up or down  |
| Sweep Time  | 10 ms to 50 s.  |
| <b>INPUTS AND OUTPUTS</b>                             |   |
| Trigger In  | TTL compatible. Max. rate 2MHz. Minimum width 50ns.   |
| Sync Out  | TTL pulse at programmed frequency, 50Ω source impedance.  |
| Modulation IN   | 5 Vp-p for 100% modulation . 10KΩ input impedance. Dc to >20KHz minimum bandwidth.  |
| <b>GENERAL</b>  |   |
| Dimensions (WxHxD)                                    | 8.4" x 3.5" x 8.3" (213mm x 88mm x 210mm)   |
| Weight  | 5.5 lbs. (2.5 Kg)   |
| Power   | 90V-264V, 30 VA max   |
| Temperature   |   |
| Operating   | 0°C to +50°C,   |
| Non-operating   | -10°C to +70°C  |
| EMC   | According to EN55011 for radiated and conducted emissions.  |
| Electrical Discharge Immunity                         | According to EN55082  |
| Safety Specifications                                 | According to EN61010  |
| <b>Three Year Warranty</b>                            |   |
| Supplied Accessories: Manual and Power Cord           |   |
| Optional Accessories: TLFG Kit                        |   |

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