

# Aplab

## 100KHz - 300MHz AM/FM SIGNAL GENERATOR DDS300



**DDS300**, adopting advanced DDS technology of frequency synthesis, and fully programmable with resolving capability of 1 Hz, frequencies from 100kHz to 300MHz and levels from -107dBm ( $1\mu\text{V}$ ) to +0dBm (224mV), is a high-powered Synthesized Signal Generator. It adopts LSI circuits and high-powered FPGA to make the design reasonable, light weight and highly reliable, consumes little power, and the mean time between failures (MTBF) less than 3000 hours. With highly reliability, convenience complete function and highly accuracy, it meets the requirement of scientific research, teaching and communication.

### Features

- Using DDS Technology
- Use of SMT, LSI`s and CPLD
- Frequency Range : 100KHz ~ 300MHz
- 1 Hz Resolution
- Reference : 10MHz,  $\pm 25$  ppm, Stability  $\pm 5$  ppm/day. Temp. Stability :  $\pm 2.5$  ppm 0 to 40 deg C.
- Voltage Range :  $1\mu\text{V}$  (-107dBm) ~ 224mV (0dBm)
- Output impedance :  $50\Omega$ , optional :  $75\Omega$
- Purity : Harmonic :  $< -25\text{dBc}$  (Output Level :  $< +4\text{dBm}$ )
- Modulation : AM, FM & FSK
- Variable Sweep Function
- Non-Volatile Memory

## TECHNICAL SPECIFICATIONS

### RF

Frequency Range : 100KHz ~ 300MHz  
Resolution : 1Hz  
Accuracy and Stability : The same as the frequency reference.

Frequency Conversion : <100ms.  
Time (within 100Hz of final frequency)

### Frequency Reference

1. Internal Standard : TCXO 10.000MHz.  
Frequency  
Freq. movement :  $\pm 2.5$ ppm (0°C 40°C).  
when temperature changes  
Frequency Accuracy :  $\pm 25$ ppm.  
Frequency Stability :  $\pm 5$ ppm/day.
2. External Frequency Input  
Frequency : 10MHz.  
Amplitude : 0.3Vrms ~ 1Vrms (50 $\Omega$  load).  
Internal and external frequency switch automatically.

### Output Level of RF

Range : 1 $\mu$ V (-107dBm) ~ 224mV (0dBm).  
Resolution : 0.1dB.  
RF Output Accuracy :  $\pm 1$ dB from 10MHz to 100MHz (1mV ~ 100mV)  
 $\pm 2$ dB above 100MHz and below 10MHz (1mV ~ 100mV).

SWR : <1.3.  
Output Impedance : 50 $\Omega$ , (optional : 75 $\Omega$ ).

### Purity of Frequency Content

Harmonic (Output Level :  $\leq +4$ dBm)  
AM on CW – better than 50 dB.  
FM on CW – better than 50 dB.

### FM

Frequency offset of Vp-p (when AC FM, speed is over 25Hz) : 0 ~ 100KHz.  
Resolution : 100Hz.  
Accuracy :  $\pm 5\% \pm 50$ Hz (when modulated speed is internal 1KHz and frequency offset of p-p is over 5KHz).

Modulating Frequency : Internal 1KHz or 400Hz.  
Distortion : <5% (When frequency offset of p-p is over 10KHz, modulated speed is internal 1KHz or 400Hz and BW : 0.05 ~ 10KHz).

AM on FM – better than 5% up to 30 KHz FM.

### FSK

Modulated signal is TTL level from external.

FSK modulate in following frequency

100KHz ~ 1.5MHz (FSK speed is less than 25KHz)  
1.5MHz ~ 20MHz (FSK speed is less than 25KHz)  
20MHz ~ 65MHz (FSK speed is less than 50KHz)  
65MHz ~ 300MHz (FSK speed is less than 2KHz).

### Sweep Frequency

Sweep Speed : 10ms ~ 1000ms, step is 10ms.  
Frequency Ranges : 100KHz ~ 65MHz, 65MHz ~ 110MHz, 110MHz ~ 200MHz, 200MHz ~ 300MHz.

### AM

RF Frequency : 1.5MHz ~ 300MHz.  
AM Depth : 0 ~ 100% (Output Level  $\leq +4$ dBm).  
Resolving Capability : 1% (AM Depth  $\geq 10\%$ )  
0.1% (AM Depth < 10%).

Accuracy : +5% of the reading +5% of FSD @AM Depth <70%.

Modulation Frequency :  
Internal : 1KHz or 400Hz.  
Ext. Freq. response - within +1dB from 50Hz to 10KHz w.r.t. 1KHz.

Distortion : <5%.  
Modulation Speed : 1KHz, modulation degree : 30%,  
BW : 0.05 ~ 10KHz, typical value).

FM on AM – less than 500Hz at 30% AM.

### Modulation Source

Impedance : 600 $\Omega$  (BNC).  
Output from Internal : Speed : 1KHz or 400Hz :  
Modulation Source : Amplitude : 1Vpk  
Input from External : Amplitude : 0 ~ 1Vpk.  
Modulation Source

### Interface

Interface : RS232 (optional).  
Store / Recall : Supply register for the function of store or recall in front panel.

Power Supply Requirement : 230V  $\pm 10\%$ , 50Hz  $\pm 5\%$ ,  $\leq 40$ VA.

### Environmental Condition

Temperature Storage : -10°C to +60°C.  
Operating Temperature : 0°C to +40°C.  
Reliability : MTBF (Mean Time Between Failures) : = 3000hrs.

### Standard Accessories :

BNC(M) to BNC(M) Cable : 1 No.  
Mains Cord : 1 No.  
Instruction Manual : 1 No.  
RS232 Data Cable : 1 No. (optional)

**Mechanical Dimensions** : 240 (W) x 90 (H) x 363 (D)

**Weight** : 3 Kg.

WE PURSUE A POLICY OF CONTINUOUS DEVELOPMENT AND PRODUCT IMPROVEMENT. THUS THE SPECIFICATIONS IN THIS DOCUMENT AND THE LOCATION OF CONTROLS ON THE FRONT PANEL MAY BE CHANGED WITHOUT NOTICE.

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