WE7121
10 MHz Function Generator Module

■ GENERAL

The WE7121 10-MHz function generator module is complete with all of the basic features of a function generator.

The module contains in its flash memory the graphic data for screens used to set such data items as the waveform, output voltage and frequency necessary for module operation. When connected to a personal computer, the module is actuated once it transfers the graphic data to the computer. The module can generate simplified arbitrary waveforms.

■ FEATURES

- 1-µHz to 10-MHz oscillation frequency range
- Can generate simple arbitrary waveforms
- Operates in sync with an adjacent WE7121 module

■ Performance Specifications

The following performance specifications are attained under standard operating conditions ("General Specifications").

Waveform output
Number of output channels: 1 channel
Standard output waveforms: Sine wave/square wave (duty cycle fixed at 50%)/triangular wave/ramp wave/pulse wave (duty cycle variable), and inversions of each waveform
Arbitrary waveform
Output amplitude resolution: 12 bit
Memory length: 16384 points (some points are not generated when the repetitive frequency is 2.4 kHz of higher.)
Output operation
Continuous oscillation (CONT): Outputs the waveform continuously
Trigger oscillation (TRIG): Outputs the specified count (integer) of burst waveforms in sync with the trigger.
Gate oscillation (GATE): Outputs the integer count of burst waveforms while the gate is enabled.
DC output (DC): Outputs a DC voltage.
Oscillation frequency range
Sine/Square wave: 1 µHz to 10 MHz
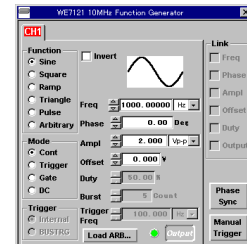Triangular/Pulse wave: 1 µHz to 200 kHz
Ramp wave: 1 µHz to 200 kHz
Arbitrary waveform: 1 µHz to 200 kHz
Oscillation frequency resolution: 1 µHz or 9 digits maximum
Oscillation frequency accuracy: ±20 ppm
Oscillation frequency stability: ±20 ppm (when ambient temperature is 5 to 40°C)
Oscillation reference clock: 40.2107 MHz

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Output characteristics
Maximum output voltage (see Note 1): ±10 V
Amplitude setting range (see Note 1): 20 Vp-p (resolution: 1 mVp-p)
Amplitude accuracy (see Note 1) (for 1 kHz sine wave): ±(0.5% of set value + 14 mV)
Oscillation frequency characteristics (see Note 2)
Sine wave
≤ 100 kHz ±0.1 dB
≤ 1 MHz ±0.2 dB
≤ 10 MHz ±0.5 dB
Square/Pulse wave (duty cycle 50%): ≤ 10 kHz ±2%
Triangular wave: ≤ 10 kHz ±3%
Ramp wave: ≤ 10 kHz ±3%
Offset voltage setting range (see Note 1): ±10 V (resolution: 1 mV)
Offset voltage accuracy (see Note 1): ±(0.3% of set value + 0.2% of set amplitude + 20 mV)
DC output setting range (see Note 1): ±10 V (resolution: 1 mV)
DC output accuracy (see Note 1): ±(0.3% of set value + 20 mV)
Output impedance: 50 Ω ±1%, except open when the output is turned OFF
Maximum output current: ±200 mA
Output format: Non-isolated unbalanced
Connector type: BNC

Note 1: Value under high impedance load.
Note 2: Amplitude 20 Vp-p, offset voltage 0 V, 50 Ω load, measures RMS value with 1 kHz as a reference.

Sine wave purity
   Harmonics (see Note) (Maximum value of the 2nd to 5th
               order harmonic components)
      100 kHz: –55 dBc or less
      1 MHz: –45 dBc or less
      10 MHz: –35 dBc or less
   Harmonic distortion (see Note) (RMS value of 2nd to 5th
               order harmonic components)
      100 kHz: 0.3% or less
   Spurious response (see Note) (frequency range 1 kHz to
               100 MHz)
      100 kHz: –55 dBc or less

   Note: Measured with 20 Vp-p amplitude, 0 V offset voltage,
          50 Ω load.

Characteristics of sine, pulse, triangular waves
   Rise time (see Note)
      Square wave: 30 ns or less (10% - 90%)
      Pulse wave: 100 ns or less (10% - 90%)
   Overshoot (see Note): ±5% or less of the output p-p value
   Duty cycle setting (pulse wave only)
      Setting range: 0 to 100% (resolution: 0.01% or 25 ns)
      Time accuracy (≤ 10 kHz): ±0.2% of (1/set frequency)
      Jitter: 1 clock cycle

   Note: Measured with 20 Vp-p amplitude, 0 V offset voltage,
          50 Ω load.

Phase
   Target: Start/stop phase when using trigger/gate
               oscillation
   Setting range: –10000 deg to +10000 deg (resolution: 0.01
               deg)

Trigger/Gate
   Trigger source: Internal trigger, Bus trigger (BUSTRG1/
               BUSTRG2) signal on WE bus
   Setting range of internal trigger frequency: 1 mHz to 50
               kHz (resolution: 1 mHz)
   Bus trigger (BUSTRG1/BUSTRG2) signal output source:
               Able to output waveform synchronization
               output (SYNC) signal
   Setting range of burst count: 1 to 65535 counts (step: 1)
   Gate source: Bus trigger (BUSTRG1/BUSTRG2) signal on
               the WE bus

Synchronous operation
   Skew between modules (when modules are linked and
               outputting the pulse wave): 70 ns per module
               (Typical value (see Note 1))
   Isolation between channels (see Note 2) (when modules
               are linked): –65 dB (Typical value (see Note
               1))

   Note 1: Typical value represents a typical or average value.
           It is not strictly guaranteed.
   Note 2: Output waveform: Cross talk for a 10 MHz sine
           wave with 20 Vp-p amplitude, 0 V offset voltage, 50
           Ω load.

■ Specifications of the Auxiliary Output

Waveform synchronization signal output (SYNC OUT)
   Output level: TTL level, under high impedance load
   Output impedance: Approx. 50 Ω
   Maximum output current: ±3.2 mA
   Output format: Non-isolated unbalanced
   Connector type: BNC

■ General Specifications

   Standard operating conditions
      Ambient temperature: 23 ±2°C, Ambient humidity: 50
               ±10% RH, Error on supply voltage/
               frequency: within 1% of rating, after the
               warm-up time has passed
   Warm-up time: At least 30 minutes
   Operating conditions: Same as that of the measuring
               station
   Storage conditions
      Temperature: –20°C to 60°C
      Humidity: 20% to 80% RH (no condensation)
   Power consumption: 7 VA (Typical value at 100 V/50 Hz
               (see Note))
   External dimensions: Approx. 33 (W) × 243 (H) × 232 (D)
               mm (projections excluded)
   Weight: Approx. 0.7 kg
   Number of dedicated slots: 1
   Standard accessory: User's Manual (1)
   Optional accessory
      366924   BNC cable (1 m)
      366925   BNC cable (2 m)
      366926   BNC alligator clip cable (1 m)
      366921   Adapter (BNC plug-banana terminal jack)
      366927   Adapter (BNC plug-RCA jack)
      366928   Adapter (BNC jack-RCA plug)

   Note: Typical value represents a typical or average value. It
          is not strictly guaranteed.

AVAILABLE MODEL

Model	Description
707121/HE	10 MHz Function Generator Moule

■ Dimensions

Unit: mm (inch)