KUSAM-MECO®

An ISO 9001:2015 Company

THINK SAFETY
THINK KUSAM-MECO®

25MHz ARBITRARY WAVEFORM GENERATOR

Model - KM 3022B

NEW

Preliminary Data

FEATURES :

- **Frequency Range :** 25 MHZ sine wave frequency.
  15 MHz square wave frequency
- Frequency sweep and burst capability.
- **Built-in function generator includes:**
  sine, square, triangle, pulse, noise, harmonic.
- Arbitrary waveform generator with 2M waveform length, 16-bit resolution
- Built-in more than 160 arbitrary waveforms, including exponential rise, exponential fall, ECG, gauss, haversine, Lorentz, dual-tone, DC etc.
- Support AM, DSB-AM, FM, PM, ASK, FSK, PSK, BPSK, QPSK, 3FSK, 4FSK, OSK and PWM modulations.
- Built-in high-order harmonic generator (at most 16-order harmonics).
- **Abundant I/O:** waveform output, sync signal output, modulation input, 10MHz external time base input/output, and trigger input/output.
- Waveform creation PC software included.
- USB remote interfaces.
- SCPI Compatibility. For easy instrument programming.

GENERAL SPEICIFICATION:

- **Display :** 4.3-inch color TFT LCD screen.
- Built in 7 digit / second high resolution 80MHz frequency counter.
- **Operating Temperature:** 0 °C to 45 °C
- **Storage Temperature:** - 20 °C to 60 °C
- **Humidity :** ≤+104°F(≤+40°C): ≤90% RH (non-condensing)
  106°F to 122°F (+41°C to 50°C): ≤60% RH (non-condensing)
- **Altitude :** Operating Temperature: Up to 3,000 m
  Storage Temperature : Up to 15,000 m
- **Pollution degree :** 2
- **Power supply :**
  100-120VACRMS (±10%), 45Hz to 440Hz, CAT II
  120-240VACRMS (±10%), 45Hz to 66Hz, CAT I
- **Power onsumption :** < 30W
- **Dimension :** Approx. 310(L) X 260(W) X 110(H)mm
- **Weight :** Approx. 3 kg.
- **Accessories :** BNC TO BNC Cable, Test Leads-2pcs., Power Cord, USB cable & Software CD with User Manual
  Fuse : T, 0.5A, 250V, 5 x 20mm

All Specifications are subject to change without prior notice.

KUSAM-MECO®
An ISO 9001:2015 Company

THINK SAFETY
THINK KUSAM-MECO®

ELECTRICAL SPEICIFICATION: KM 3022B

Channel	2
Memory Depth	2M
Maximum Frequency	25M
Sampling Rate	250MSa/s
Voltage Resolution	16Bit
Waveforms	
Standard Waveforms	Sine, Square, Ramp, Pulse, Noise, Harmonic, DC
Arbitrary Waveforms Dual-Tone, etc.	More than 160 kinds, including Sinc, Exponential Rise, Exponential Fall, ECG, Gauss, Haver Sine, Lorentz,
Frequency Characteristics	
Sine	1μHz to 25MHz
Square	1μHz to 15MHz
Pulse	1μHz to 15MHz
Ramp	1μHz to 2MHz
Harmonic	1μHz to 10MHz
Noise (-3dB)	100 MHZ bandwidth
Arbitrary	μHz to 15MHz
Resolution	1μHz
Accuracy	±1ppm, 18 to 28°C
Square Characteristics	
Rise/Fall time	Typical (1kHz, 1Vpp) ≤9ns
Overshoot	Typical (100kHz, 1Vpp) ≤5%
Duty Cycle	0.001% to 99.999% Range varies with frequency
Non-symmetry	1% of the period + 4ns
Ramp Characteristics	
Linearity	≤ 1% of peak output (typical, 1kHz, 1Vpp, symmetry 100%)
Symmetry	0% to 100%
Pulse Characteristics	
Period	67ns to 1Ms
Pulse	≥16ns
Duty Cycle	0.001%~99.999%, Range varies with frequency
Rise/Fall time	≥9ns
Overshoot	Typical (1kHz, 1Vpp) ≤5%

ELECTRICAL SPEICIFICATION: KM 3022B

Arbitrary Waveform Generator	
Waveform Length	2M
Vertical Resolution	16 Bits
Sampling Rate	1uSa/s to 75MSa/s, 1uSa/s resolution
Rise/Fall time	≥9ns
Overshoot	Typical (1Vpp) ≤5%
Harmonic Characteristics	
Harmonic order	≤16
Harmonic type	Even, Odd, All
The harmonic amplitude can be set for all harmonics	
Harmonic phase	can be set for all harmonics
Amplitude Characteristics (50Ω terminal)	
Amplitude Range	≤10MHz: 1mVpp to 10Vpp ≤55MHz: 1mVpp to 5.5Vpp ≤80MHz:1mVpp to 3.5Vpp ≤100MHz:1mVpp to 2Vpp
Accuracy	Typical (1kHz Sine, 0V offset, > 10mVpp) ±1% of setting value ± 5mVpp
Amplitude flatness (relative to 1kHz Sine, 3.5Vpp, 50Ω)	≤5MHz: ±0.1dB ≤15MHz: ±0.2dB ≤25MHz: ±0.3dB ≤40MHz: ±0.5dB ≤100MHz: ±1.0dB
Unit	Vpp, mVpp, Vrms, dBm (50Ω terminal)
Resolution	1mVpp
Offset Characteristics (50Ω terminal)	
Range	± 5Vpk AC+DC
Accuracy	± (1% of setting value + 5mV + 1% of amplitude)
Waveform Output	
Impedance	50Ω

ELECTRICAL SPEICIFICATION: KM 3022B

Modulation Characteristics	
Modulation Type	AM, DSB-AM, FM, PM, ASK, FSK, PSK, BPSK, QPSK, 3FSK, 4FSK, OSK, PWM
AM	
Carrier Waveforms	Sine, Square, Ramp, Pulse, Harmonic, Arb. (except DC)
Modulation Source	Internal, External, another channel
Modulation Waveforms	Sine, Square, Ramp, Noise, Sinc, Exp Fall, Haver Sine, Lorentz, Gause, Dual Tone, ECG
Modulation Frequency	2mHz to 1MHz
Modulation Depth	0% to 120%
DSB-AM	
Carrier Waveforms	Sine, Square, Ramp, Pulse, Harmonic, Arb. (except DC)
Modulation Source	Internal, External, another channel
Modulation Waveforms	Sine, Square, Ramp, Noise, Sinc, Exp Fall, Haver Sine, Lorentz, Gause, Dual Tone, ECG
Modulation Frequency	2mHz to 1MHz
Modulation Depth	0% to 120%
FM	
Carrier Waveforms	Sine, Square, Ramp, Pulse, Harmonic, Arb. (except DC)
Modulation Source	Internal, External, another channel
Modulation Waveforms	Sine, Square, Ramp, Noise, Sinc, Exp Fall, Haver Sine, Lorentz, Gause, Dual Tone, ECG
Modulation Frequency	2mHz to 1MHz
PM	
Carrier Waveforms	Sine, Square, Ramp, Pulse, Harmonic, Arb. (except DC)
Modulation Source	Internal, External, another channel
Modulation Waveforms	Sine, Square, Ramp, Noise, Sinc, Exp Fall, Haver Sine, Lorentz, Gause, Dual Tone, ECG
Modulation Frequency	2mHz to 1MHz
Phase Deviation	0 ° to 360 °
ASK	
Carrier Waveforms	Sine, Square, Ramp, Pulse, Harmonic, Arb. (except DC)
Modulation Source	Internal, External
Modulation Waveforms	Square with 50% duty cycle
Rate	2mHz to 1MHz

ELECTRICAL SPEICIFICATION: KM 3022B

FSK	
Carrier Waveforms	Sine, Square, Ramp, Pulse, Harmonic, Arb. (except DC)
Modulation Source	Internal, External
Modulation Waveforms	Square with 50% duty cycle
Rate	2mHz to 1MHz
PSK	
Carrier Waveforms	Sine, Square, Ramp, Pulse, Harmonic, Arb. (except DC)
Modulation Source	Internal, External
Modulation Waveforms	Square with 50% duty cycle
Rate	2mHz to 1MHz
BPSK	
Carrier Waveforms	Sine, Square, Ramp, Pulse, Harmonic, Arb. (except DC)
Modulation Data Source	PN15, PN21, 01, 10
Rate	2mHz to 1MHz
QPSK	
Carrier Waveform	Sine, Square, Ramp, Pulse, Harmonic, Arb. (except DC)
Modulation Data Source	PN15, PN21
Rate	2mHz to 1MHz
3FSK	
Carrier Waveform	Sine, Square, Ramp, Pulse, Harmonic, Arb. (except DC)
Modulation Source	Internal
Modulation Waveforms	50% duty cycle square wave
Rate	2mHz to 1MHz
4FSK	
Carrier Waveform	Sine, Square, Ramp, Pulse, Harmonic, Arb. (except DC)
Modulation Source	Internal
Modulation Waveforms	50% duty cycle square wave
Rate	2mHz to 1MHz
OSK	
Carrier Waveform	Sine
Modulation Source	Internal, external
OSC Time	8 ns to 4.99975 ms
Rate	2mHz to 1MHz

KUSAM-MECO®
An ISO 9001:2015 Company

THINK SAFETY
THINK KUSAM-MECO®

ELECTRICAL SPEICIFICATION: KM 3022B

PWM	
Carrier Waveform	Square
Modulation Source	Internal, external and another channel
Modulation Waveforms	Sine, Square, Ramp, Noise, Sinc, Exp Fall, Haver Sine, Lorentz, Gause, Dual Tone, ECG
Modulation Frequency	2mHz to 50KHz
Duty Deviation	0.1% to 49.9%
External Modulation Input	
Input Range	AM, DSB-AM, FM, PM, OSK, PWM: 75MVRMS - ± 5VAC + DC, ASK, FSK, PSK: TTL level
Input Bandwidth	50KHz
Input Impedance	10kΩ
Sweep Characteristics	
Carrier Waveform	Sine, Square, Ramp, Pulse, Harmonic, Arb. (except DC)
Type	Linear
Type Direction	Up
Sweep Time	1ms to 50Ks
Hold/Return Time	1ms to 50Ks
Trigger Source	Internal, External, Manual
Mark	Falling Edge of Sync signal
Burst Characteristics	
Carrier Waveform	Sine, Square, Ramp, Pluse, Harmonic, Arb. (except DC)
Carrier Frequency	1μHz to 60MHz
Burst Count	1 to 2000 000 000
Start/Stop Phase	0° to 360°
Internal Period	2μs to 500s
Gated Source	External trigger
Trigger Source	Internal, External or Manual
Counter	
Function	Frequency, Period, Positive/Negative Pulse Width, Duty Cycle
Frequency	1uHz to 80MHz
Gate time	10ms to 16s
Level	0 to 3.3V

KUSAM-MECO®
An ISO 9001:2015 Company

THINK SAFETY
THINK KUSAM-MECO®

ELECTRICAL SPEICIFICATION: KM 3022B

Trigger Characteristics	
Trigger Input	
Level	TTL - compatible
Slope	Rising or falling (selectable)
Pulse width	>100ns
Trigger Output	
Level	TTL - compatible
Pulse Width	>60ns
Maximum Rate	1MHz
Clock Reference	
External Reference Input	
Lock Range	10 MHz + 50 Hz
Level	Low level: 0 to 400mV, high level: 2.5V to 5V
Locking Time	<2s
Impedance	50Ω, DC coupling
Internal Reference Output	
Frequency	10 MHz + 50 Hz
Level	3.3 Vpp
Impedance (typical)	50Ω, DC coupling
Sync Output	
Level	TTL - compatible
Impedance	50Ω, nominal value

All Specifications are subject to change without prior notice.

KUSAM-MECO®
An ISO 9001:2015 Company

Shop no.18, 1st Floor, CIDCO Shopping Complex, Plot # 9, Sector-7, Rajiv Gandhi Marg, Sanpada, Navi Mumbai - 400705.
Sales Direct : +91-9867488006, 9867675093 Email : sales@kusam-meco.co.in Web.: www.kusamelectrical.com