LIST OF PRODUCTS

- ✶ Digital Multimeter
- ✶ Digital AC & AC/DC Clampmeter
- ✶ AC Clamp Adaptor
- ✶ AC/DC Current Adaptor
- ✶ Thermo Anemometer
- ✶ Thermo Hygrometer
- ✶ Distance Meter
- ✶ Digital Lux Meter
- ✶ Network Cable Tester
- ✶ Power Factor Regulator
- ✶ Earth Resistance Tester
- ✶ Digital Panel Meters
- ✶ DC Power Supplies
- ✶ High Voltage Detector
- ✶ Calibrators
- ✶ Gas Analysers
- ✶ Frequency Counter
- ✶ Function Generator
- ✶ Phasing Sticks
- ✶ Battery Tester
- ✶ Waterproof Pen Testers
- ✶ Solar Power Meter
- ✶ EMF Detector
- ✶ Wood, Paper & Grain Moisture Meter
- ✶ Transistorised Electronic Analog & Digital Insulation Resistance Testers(upto 10 KV)
- ✶ Digital Sound Level Meter & Sound Level Calibrator
- ✶ Digital contact & Non-contact Type Tachometer
- ✶ Digital Non-contact (infrared) Thermometer
- ✶ Maximum Demand Controller/Digital Power Meter
- ✶ Digital Hand Held Temperature Indicators

KUSAM-MECO®

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Website : www.kusamelectrical.com
www.kusam-meco.co.in

KUSAM-MECO®

AN ISO 9001:2015 COMPANY

Low Frequency digital signal generator

MODEL - KM 2001

OPERATION MANUAL

WARRANTY

Each “KUSAM-MECO” product is warranted to be free from defects in material and workmanship under normal use & service. The warranty period is one year (12 months) and begins from the date of despatch of goods. In case any defect occurs in functioning of the instrument, under proper use, within the warranty period, the same will be rectified by us free of charges, provided the to and fro freight charges are borne by you.

This warranty extends only to the original buyer or end-user customer of a “KUSAM-MECO” authorized dealer.

This warranty does not apply for damaged Ic’s, fuses, burnt PCB's, disposable batteries, carrying case, test leads, or to any product which in “KUSAM-MECO’s” opinion, has been misused, altered, neglected, contaminated or damaged by accident or abnormal conditions of operation or handling.

“KUSAM-MECO” authorized dealer shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of “KUSAM-MECO”.

“KUSAM-MECO’s” warranty obligation is limited, at option, free of charge repair, or replacement of a defective product which is returned to a “KUSAM-MECO” authorized service center within the warranty period.

THIS WARRANTY IS BUYER’S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. “KUSAM-MECO” SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE WHATSOEVER.

All transaction are subject to Mumbai Jurisdiction.

KUSAM-MECO®

DIGITAL SIGNAL GENERATOR 2MHz

KM 2001



KUSAM-MECO®

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KUSAM-MECO®

MUMBAI

TEST CERTIFICATE

Co2 / Temp. / RH DATA LOGGER

This Test Certificate warrantees that the product has been inspected and tested in accordance with the published specifications.

The instrument has been calibrated by using equipment which has already been calibrated to standards traceable to national standards.

MODEL NO. **KM 2001**

SERIAL NO. _____

DATE: _____

ISO 9001
REGISTERED

QC
KUSAM-MECO
PASS

(Drawing 7)

(Wave show appliance)

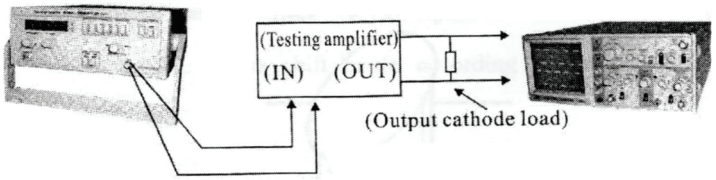


Chart 8

Output waves	Amplifier shown characters	
	Frequency of amplifier is even, the evenness may arrive at 10 times of input frequency	
	Begin declining when the evenness arrive at 10 times of input frequency	
	Decline happened below 10 time of input frequency	
	Arrive at high point is just at the 10 times of input frequency	

1. Characters

• Strongly steady electro-circuit.
• Digital display about frequency &operate conveniently.
• 6-phases from 0.2Hz-2MHz
• Output for empty carry arrive at 5V,600K2 carried will be higher than 2V(sine wave).
• Output voltage balance may be adjusted by 2 groups of attenuator every 20dB and 40dB, total 60dB or potentiometer in continuity.
• Sine wave of square wave may be chosen to output.

2. Electric appliance nature

1) Frequency range
X1 shift: 0.2Hz-20Hz
X10 shift: 2Hz-200Hz
X100 shift: 20Hz-2KHz
X1K shift: 200Hz-20KHz
X10K shift: 2KHz-200KHz
X100K shift: 20KHz-2MHz

2) Sine wave nature
Output voltage: 5V
Distortion ratio: <0.1% 400Hz-200KHz
<0.5% 50Hz-500KHz
Evenness output: ±1.5 decibels (about equal to 1KHz)

3) Square wave nature
Output voltage: > 10V (highest point)
Rising time: <0.25 microseconds (within 200KHz)
Empty occupied ratio: 50%±5% (from 1KHz to 200KHz

4) The nature of output pole
Output impedance :6005 l 0%
Attenuator:-20dB,-40dB and in 60dB series

5) Power wastage

Input voltage: Alternating current 110V or 220V for choice
Power wastage: about 10 watts

6) The size of the outer shell 270mm*225mm*90mm

7) Fittings

Power supply wire: 1 piece
Testing nip: 1 piece
User manual: 1 book

3.Eleetro-circuit description

1) please read the following written description according to drawing (1)

A. Sine wave message caused by the appliance depends on output wave shape be set

B. The output message will be regulated by to buffer of the machine at first and regulated attenuator has 0-60dB setting range on the 600 impedance.

C. Wen family bridge adapted on the main body of the shaking & burning appliance, set the phases used for regulated electric capacity.
The buttons set on the board may change frequency within the range.

D.Amortized amplifier is a wo phase direct current amplifier, offer the output pole about low impedance.

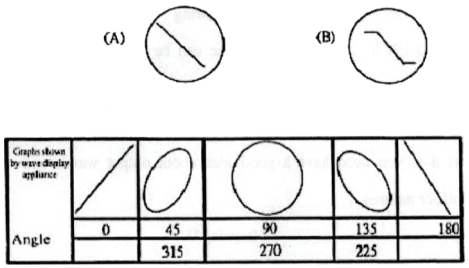
E.Because of using non-linearity hearing resistance on minus direction for turning wheel, our machine can do the sine wave shape steadily in no time with the lowest distortion.

F. Adapt Smith Special integer circuit on square wave integer appliance and high speed rising and descending square wave will be produced.

G. Output pole is push-pull direct current amplifier and can offer low impedance output circuit within DC-1KHz

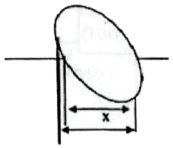
H. Output voltage balance may be adjusted by 2 absolute attenuator every 20dB and 40dB or in 60dB series on 600 W loads.

I. The machine offer + 24V for power supply for choosing alternating current 110V or 220V. because of adapting steady voltage, it can offer steady output within setting range in spite of alternating current unsteady.



Drawing 6

$\sin\theta = x/X$ ***Check of Phase Shift Angle***



4) Message source of square wave

The appliance is of good character of rising and descending as the message source of square wave. The appliance has only 5% drop possibility when the top end is below 50Hz because it has not attached the electric capacity. Various characters will show on the display wave appliance if add to amplifier. Part of procedures will be introduced in subentry.

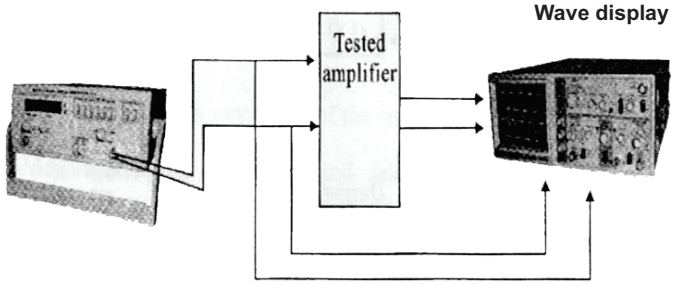
4.1 please put together according to drawing 7
4.2 press (9) to ⎍, the appliance can be output the square wave frequency
4.3 please change frequency according to you need. Please see the chart 8 if you need have a good idea about output waves and amplifier natures.

• Phasic movement testing nature

3) Connect this machine into the tested amplifier and wave show appliance accor ding to drawing 5. The wave display will show one beeline like drawing 5A if the message of the amplifier has not be shown Like drawing 5B,display that the message may be distortion. Please decrease output voltage balance to change frequency. Then the beeline change to ellipse shape, You can calculate the phasic float about the amplifier.

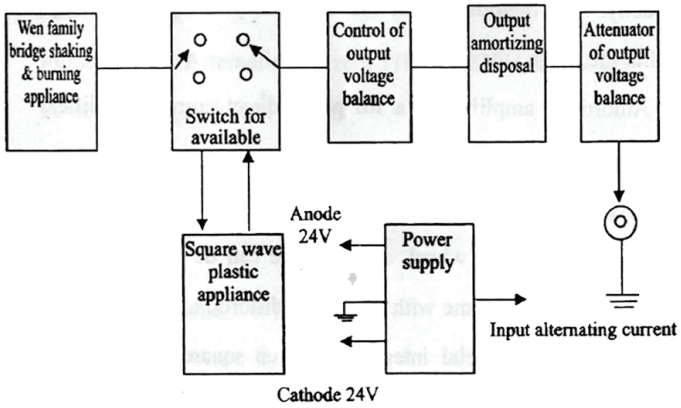
Formula : Sin θ =x/X

At first measure the maxed level turning and called “X”,the distance between level line and right ending of the ellipse is called”X” (indicated by drawing 6.)
Then phase shift angle can be calculated.
Look up the phase shift angle according to the triangle function charts.



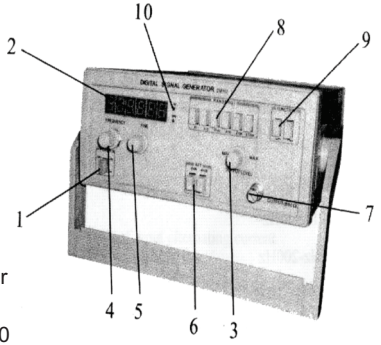
Drawing 5

4. Operation theory indicated Charts



5. Front panel

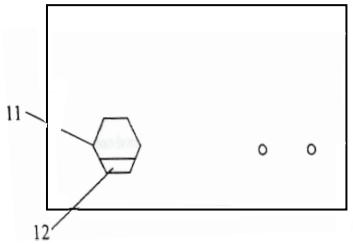
1. Power switch : Press the button is on and off at the opposite of operation
2. Frequency display : Display input frequency
3. Output voltage balance adjustment : The button mat be adjusted with continuity
4. Circumrotate button : Choose the frequency what you need
5. Frequency accurate adjusted : Using for applying the more accurate frequency
6. Attenuator : 20decibel,40 decibel and 60 decibel in series for chose



7. Output ending : Output the setting message from it
8. Frequency range setting: May preset 6 phases
   X1 shift : 0.2Hz- 20Hz
   X10 shift : 2Hz-200Hz
   X100 shift : 20Hz-2KHz
   X1K shift : 200Hz-20KHz
   X 10K shift : 2KHz-200KHz
   X100K shift : 20KHz-2MHz
9. Output wave for choice : The machine will display the sine wave if press to ∼
   The machine will display the square wave if press to ⎍
10. The Unit of the frequency (Hz and KHz)

6. Back panel

11. Power source of input alternating current
12. Fuse seat



7. Operation indication

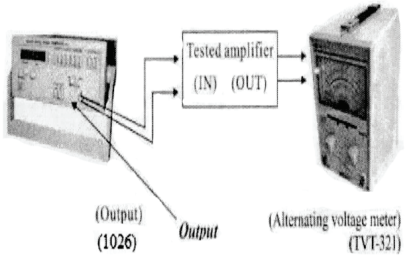
1. Turn on the machine : Please confirm whether the voltage setting (11) is right or not before turning on the machine. After checking press (1), frequency display (2) will be on shine and display the correct message for output.It shows that the machine is starting working. Please wait for 3 minutes and make the machine steady and can be put into use.
2) Wave for choice : Output the sine wave if press (9) on the ∼ shift and output the square wave if press on the ⎍ shift.

3) Frequency phase for choice Press(8) of the buttons and rotate to (4) or (5) according to what your need, the display reading can be shown on(2)
4) Output voltage balance adjustment The output voltage balance may be adjusted continually by (3), also may be adjusted by maxed (6) of 60dB. The message can be output by socket (7)

8. Using in workshop

1) **Sine wave shaking and burning appliance**
There are some characters as the message source of the sine wave aas follows:
1.1May test the distortion because of it has low distortion message
1.2May test the frequency width of the amplifier
1.3May test the amplifier maxed adding with the accurate alternator
1.4 May be regarded as message source about the impedance test the electric bridge

2)Testing the maxed adding about the amplifier
One example of testing the maxed adding about the amplifier:
Connect the machine according to drawing 4 with the tested amplifier, alternating current &voltage meter.
2.1 Adjust the attenuator (6) and the button (3) and find the reading of IV on the alternating voltage meter of the amplifier. Set the output voltage balance stated form 20c1B.
2.2 Use another alternating voltage meter to measure the voltage of the input end on the amplifier and calculate the adding amounts.



Drawing 4