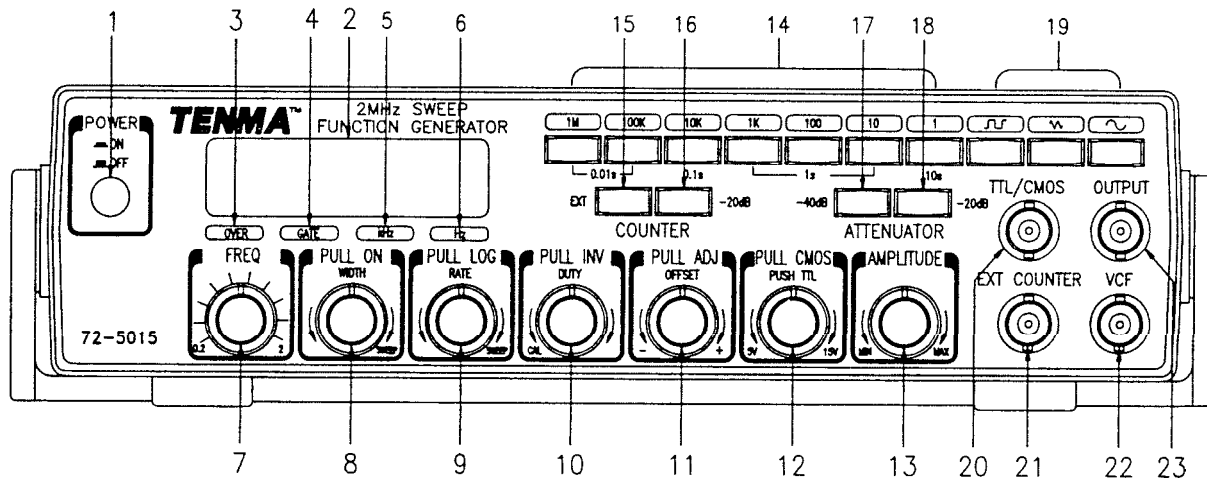
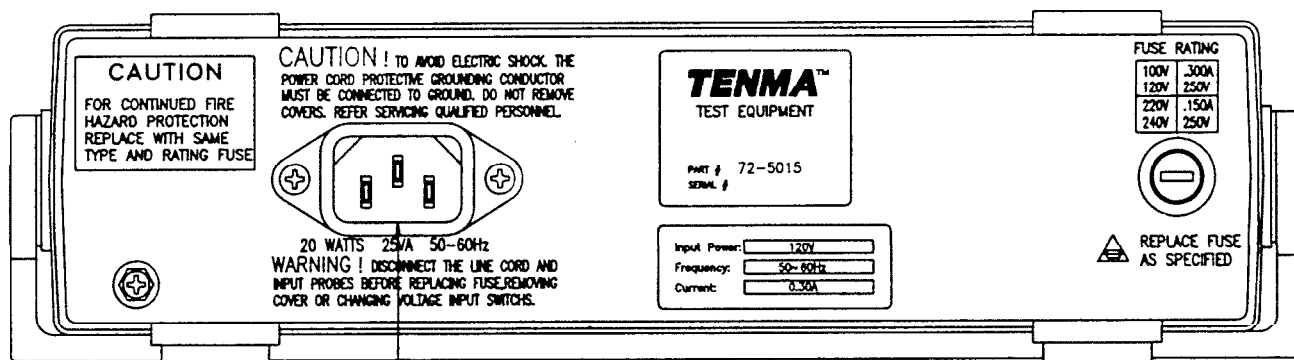


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REVISIONS			DOC. NO. SPC-F004 * Effective: 12/21/98 * DCP No: 680					
DCP #	REV	DESCRIPTION	DRAWN	DATE	CHECKD	DATE	APPRVD	DATE
430	A	RELEASED	JWM	6/16/98	JC	7/22/98	BB	7/29/98



FRONT



REAR

NOTES:

- Dimensions: 261mm(W) x 71mm(H) x 211mm(D) [10.27" x 2.79" x 8.30"]
- Weight: 1.8Kg [3.9lb]

SPC-F004.DWG

DISCLAIMER:
ALL STATEMENTS AND TECHNICAL INFORMATION CONTAINED HEREIN ARE BASED UPON INFORMATION AND/OR TESTS WE BELIEVE TO BE ACCURATE AND RELIABLE. SINCE CONDITIONS OF USE ARE BEYOND OUR CONTROL, THE USER SHALL DETERMINE THE SUITABILITY OF THE PRODUCT FOR THE INTENDED USE AND ASSUME ALL RISK AND LIABILITY WHATSOEVER IN CONNECTION THEREWITH.



<i>Unless Otherwise Specified: Dimensions are shown for reference only!</i>	DRAWN BY:	DATE:	DRAWING TITLE:			
	Jeff McVicker	6/16/98	2MHz Sweep Function Generator w/Counter			
	CHECKED BY:	DATE:	SIZE	DWG. NO.	ELECTRONIC FILE	REV
	JOHN COLE	7/22/98	A	72-5015	66F3574.dwg	A
APPROVED BY:	DATE:	SCALE: NTS		U.O.M.: INCHES [mm]		SHEET: 1 OF 4
Brett Braatz	7/29/98					

CONTROLS AND INDICATORS

POWER SWITCH (1) Press in for "power on".

COUNTER DISPLAY (2) LED display indicates internal or external input frequency dependent upon switch position.

OVER LED (3) Indicates that the counter display value is in excess of maximum count.

GATE LED (4) Indicates when counter is gated.

Hz KHz LED (5,6) Indicates whether reading is Hz or KHz.

FREQUENCY DIAL (7) This variable potentiometer selects a specific frequency within the preselected fixed range. The dial scale is calibrated from 0.2 to 2.0.

















	Invert Out Duty (cal.)	Invert In Duty (cal.)	Invert In Duty (uncal.)	Invert Out Duty (uncal.)
Square				
Triangle				
Sine				
TTL				

Table 1. The effect of the invert switch on various settings of the duty control.

SWEEP WIDTH Control (8) Adjusts period of sweep. With switch pushed in no sweep is generated unless an external sweep voltage is applied to the external VCF input socket.

SWEEP RATE Control. (9) Adjusts sweep rate of internal sweep generator and repetition rate of gate burst. Pull for log function.

DUTY Control. (10) Adjusts symmetry of output from 1:1 to 40:1. Pull to invert output waveform. When the Duty control is being used, it determines which half of the output waveform will be affected. Table (1) below illustrates the effect of the invert switch on various settings of the Duty Control.

DC OFFSET Control (11) The offset control determines the polarity and magnitude of the DC offset of the output waveform. When the control is pulled forward and centered the DC level of the output waveform will be 0 volts. Clockwise rotation will offset the output in positive direction, and counterclockwise rotation will add negative offset.

The amplitude of the waveform plus the amount of offset desired must not exceed the maximum peak to peak amplitude capability or clipping will result. (See Electrical Specifications)

CMOS LEVEL Control (12) The CMOS level control potentiometer provides CMOS level output from 5V to 15V continuously variable in pull position, fixed TTL output in push position.

tion.

AMPLITUDE Control (13) This control will provide up to 40dB of attenuation of the output waveform in depressed position. (See electrical specifications.)

RANGE SELECTOR (14) Each of the seven interlocking push buttons provides the operator with a specific frequency range. When one push button is depressed, the previously selected button will automatically release.

EXT. INT SELECTOR SWITCH (15) Selects internal or external frequency measurement.

- 20dB SELECTOR SWITCH (16) Selects the frequency counter input sensitivity. Push on is 300m Vrms (-20dB). Push off is 30m Vrms.

ATTENUATOR (17, 18) Selects output level attenuator -40dB (17) and -20dB (18) in depressed position.

MODE SWITCH (19) Three interlocking push button type switches enable the operator to select Sine, Triangle, or Square wave output. When one push button is depressed, the previously selected button will automatically release.

OUTPUT SOCKETS (20, 23) Triangle, Square and Sine waves of up to 20Vp-p (open circuit) are provided at the 50 ohm output (23). TTL/CMOS compatible pulses are obtainable

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from the TTL/CMOS BNC output.

EXT INPUT SOCKET (21) External input for frequency counter.

VCF INPUT SOCKET (22) This BNC Connector is the VCF (Voltage controlled frequency) input which gives the facility to externally sweep the generator frequency. Applying a DC Voltage (0V to + 10V) will sweep the generator frequency down 1000:1 (3 decades). Note that the total sweep range which can be achieved is depended on several factors, including the range chosen, the base frequency, and the desired sweep direction.

POWER RECEPTACLE (24) The instrument operates on line voltage of 100/120/220/240 VAC \pm 10% 50/60 Hz power dissipation approx. 25 VA.

100/120/220/240 VOLT CONVERSION

This instrument operates from a 100V, 120V, 220V or 240V AC, 50 to 60 Hz line-voltage source. The applied voltage is indicated on the rear panel. To convert from the specified voltage to other line voltages, replace the voltage plug position on the PCB, referring to the Figure 2 below and change the rear panel applied voltage indication. Also, be sure to replace the fuse to correspond to the line voltage, 0.30A fuse for 100V to 120V operation and 0.15A fuse for 220V to 240V operation. If it is

not wired to your local line voltage, set the power transformer wiring as shown below.

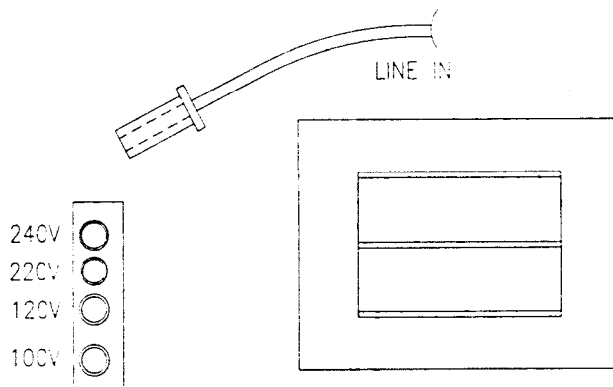


Figure 2. Line voltage conversion

SPECIFICATIONS

GENERAL SPECIFICATIONS

Output: Sine, triangle, square wave, Also TTL, CMOS square wave, pulse, ramp, sweep

Input: Voltage controlled frequency (VCF), EXT frequency counter.

Frequency Range: 0.2 Hz to 2 MHz in 7 ranges.

Storage Temperature: -20 °C to +60 °C <80% R.H.

Operating Temperature: -0 °C to +40 °C <70% R.H.

ELECTRICAL SPECIFICATIONS

At 23 °C \pm 5 °C <70% R.H.

FUNCTION GENERATOR

POWER CONSUMPTION 25 VA max.

FREQUENCY RANGES WITH RANGE SETTING

AT	1	0.2 Hz to 2.0 Hz
	10	2 Hz to 20 Hz
	100	20 Hz to 200 Hz
	1K	0.2 kHz to 2.0 kHz
	10K	2.0 kHz to 20 kHz
	100K	20 kHz to 200 kHz
	1M	0.2 MHz to 2.0 MHz

FREQ. MULTIPLIER

0.2 to 2.0 times the selected frequency range \pm 5% of full scale

FREQ. ACCURACY VOLTAGE CONTROLLED SWEEP RANGE

1000:1 minimum for 0V to + 10V DC input

SWEEP CHARACTERISTICS

Internal: Linear, Log.
Sweep Rate: 0.2 Hz to 100Hz (5 sec to 10 msec) continuously variable

Sweep Width: Variable from 1:1 to 1000:1

External Sweep: front panel VCF input provided

INPUT IMPEDANCE SINE WAVE DISTORTION TRIANGLE LINEARITY SQUARE WAVE

13 k Ω \pm 20%
10Hz to 100 kHz <1%
Linearity: <1% at 100 Hz.
Rise/fall time <100 nsec. at maximum output into 50 ohm load time symmetry \pm 3% at 100 Hz

PULSE OUTPUT

Rise/fall time <25 nsec will sink 10 TTL Loads

TTL

Amplitude Fixed > + 3V open circuit

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SPECIFICATIONS

CMOS	Rise/fall time <60 nsec Amplitude: 5V to 15V adjustable	INPUT IMPEDANCE	1M ohm (- 20dB), 500K ohms (0dB)
MAIN OUTPUT AMPLITUDE	Two Ranges: 250mV to 10Vp-p (into 50 ohms load) 500mV to 20Vp-p open circuit	PHYSICAL DIMENSIONS	
OUTPUT IMPEDANCE	50 ohms \pm 10%	WIDTH	261 mm (10.27 in)
ATTENUATOR	- 20dB, - 40dB	HEIGHT	71 mm (2.79 in)
DC OFFSET CONTROL	Variable: < - 10V to + 10V (open circuit) < - 5V to + 5V (into 50 ohms load)	DEPTH	211 mm (8.30 in)
DUTY CYCLE CONTROLS	40 to 1 minimum duty cycle change. (50% at max. CCW or cal. position)	WEIGHT	1.8 Kg (3.9lb)
		STANDARD ACCESSORIES	Operator's manual, power cord
		OPTIONAL ACCESSORIES	EB-10: 3 feet 50 Ω BNC to BNC coaxial cables EB-11: 3 feet, 50 Ω BNC to alligator clip coaxial cables EB-32: Carrying case

FREQUENCY COUNTER At 23 $^{\circ}$ C \pm 5 $^{\circ}$ C , 70% R.H.

ACCURACY	Time base accuracy \pm 1 count
TIME BASE	Oscillation frequency 10MHz
TIMP. Stability	0 $^{\circ}$ C to 40 $^{\circ}$ C < \pm 20ppm
COUNTING CAPACITY	6 digit (0.36" LED display)
GATE TIME	10 sec, 1 sec, 0.1 sec, 0.01 sec
FREQUENCY RANGE	5 Hz to 10 MHz
SENSITIVITY	<30mV RMS.
MAX. INPUT VOLTAGE	42V PK.

SIZE	DWG. NO.	ELECTRONIC FILE	REV
A	72-5015	66F3574	A
SCALE: NTS		U.O.M.: INCHES [mm]	SHEET: 4 OF 4