

# TFA

## TG40A

# Microwave Signal Source Signal Generator

9kHz-42GHz



TG40A is a high-performance, miniaturized microwave signal source. It provides high dynamic output power (-120dBm~+17dBm), high spurious signal suppression, low phase noise, excellent signal purity and frequency stability in the frequency range of 9KHz~42GHz. It is used for debugging and testing of devices, modules, components and systems in the fields of semiconductors, radar, quantum, and communications.

# Product Features

High performance

Miniaturization

Large dynamic power output

Low spurious

Low harmonics

Low phase noise





# Performance

1 Frequency range  
9kHz~42GHz

5 Spurious suppression  
-80dBc @ 10GHz

2 Frequency resolution  
0.001Hz

6 Harmonic suppression  
-50dBc @ 10GHz

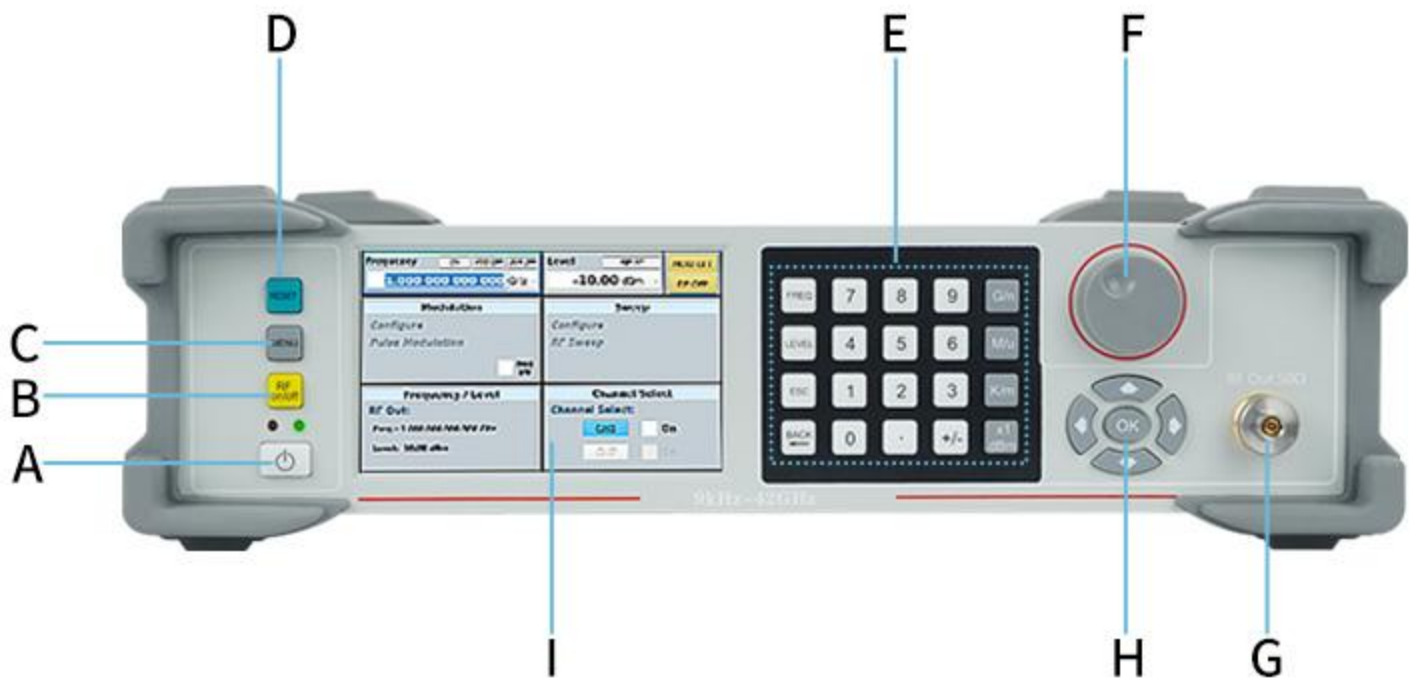
3 Large dynamic  
output range  
-120dBm~+17dBm

7 Phase noise  
-112dBc/Hz@  
10kHz (10GHz)

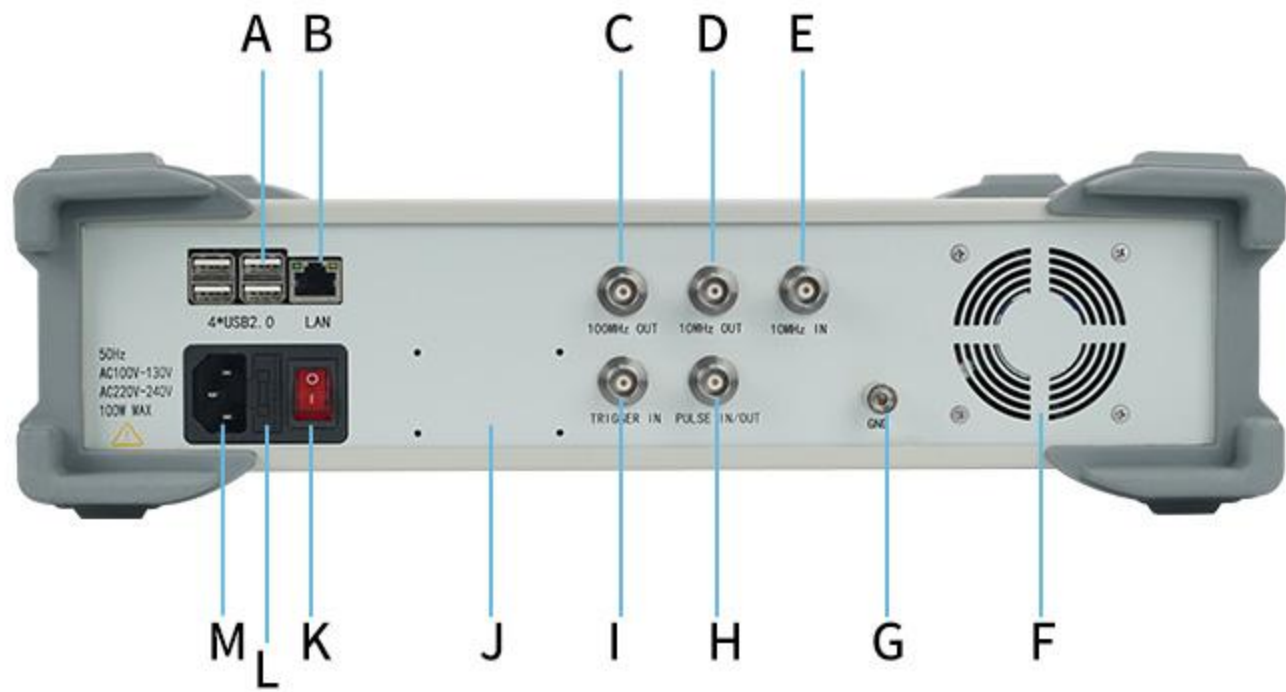
4 Power resolution  
0.1dB

8 Dimensions  
360\*360\*89mm

# Product Introduction



Number	Name	Description
A	DC switch	
B	RF switch	
C	Menu key	
D	Reset key	
E	Keyboard	
F	Knob	
G	RF output	2.92mm-Male
H	Directional keys	
I	Display	5 inches



Number	Name	Description
A	USB port	4*USB2.0
B	LAN port	RJ45
C	100MHz Output	BNC-Female
D	10MHz Output	BNC-Female
E	10MHz Input	BNC-Female
F	Fan	Exhaust
G	Grounding post	GND
H	Pulse signal input/output	BNC-Female
I	Trigger signal input	BNC-Female
J	Nameplate	
K	AC switch	
L	Fuse box	Replaceable fuse
M	Replaceable fuse	

# Performance Parameters

Indicator	Minimum value	Typical value	Maximum value	Remarks
Frequency range	9kHz		42GHz	
Frequency resolution		0.001Hz		
Operating mode	Continuous wave (CW) or sweep mode			
<b>Frequency reference</b>				
Internal reference aging rate		$\pm 0.3$ ppm/year		
Initial calibration accuracy		$\pm 0.1$ ppm		
<b>External reference input (50<math>\Omega</math>)</b>				
Input frequency		10MHz		
Input power	+3dBm	+5dBm	+10dBm	
Lock range		$\pm 0.5$ ppm		
Waveform	Sine or square wave			
<b>Internal reference output</b>				
Output frequency	10MHz and 100MHz			



Output power	+5dBm		+10dBm	Output frequency: 10MHz
	+5dBm		+10dBm	Output frequency: 100MHz
Output frequency stability		$\pm 0.1\text{ppm}$		
Phase noise		-145dBc/Hz@1kHz		Output frequency: 10MHz
		-155dBc/Hz@1kHz		Output frequency: 100MHz
Spurious		-70dBc		

## Spurious

Sweep frequency		10ms		
Pulse		50ns		$\geq 100\text{MHz}$
		120ns		$< 100\text{MHz}$

## Output power

1GHz	-120dBm		+17dBm	
10GHz	-120dBm		+17dBm	
20GHz	-120dBm		+17dBm	
30GHz	-120dBm		+17dBm	
40GHz	-120dBm		+17dBm	
Output power resolution		0.1dB		



Impedance		50Ω		
Harmonic suppression				
1GHz		-50dBc	-40dBc	
10GHz		-55dBc	-40dBc	
20GHz		-45dBc	-40dBc	
<b>Subharmonic suppression</b>				
1GHz		-90dBc	-80dBc	
10GHz		-90dBc	-80dBc	
20GHz		-85dBc	-80dBc	
<b>Spurious (frequency deviation <math>\geq</math> 5KHz)</b>				
1GHz		-85dBc	-80dBc	
10GHz		-80dBc	-75dBc	
20GHz		-74dBc	-70dBc	
<b>Pulse modulation</b>				
On-off ratio		-65dBc		
Minimum pulse width		100ns		
Minimum period		110ns		
<b>External pulse input</b>				
Level logic (LVTTTL)		+3.3V		

## Internal pulse generator

Square wave rate	0.1Hz		10MHz	
Pulse period	110ns		100s	
Pulse width	100ns		99.999 999s	
Rising edge		25ns		> 100MHz
Falling edge		25ns		
Resolution		100ns		
Adjustable trigger delay	20ns		100s	

## Scan characteristics

Working mode		Step scan		
Scan range	9kHz		40GHz	
Dwell time	10ms		10s	
Time resolution		1 $\mu$ s		
Frequency switching speed		300 $\mu$ s		Internal source

## General parameters

SCPI				Keyboard, touch screen
Power supply		AC110V / 220V		
Operating temperature	0 °C		+50 °C	
Weight			10kg	
Dimensions		360mm×360mm ×89mm		Excluding protection angle

## Phase noise

Phase noise	100Hz	100Hz	100Hz	100Hz	100Hz
dBc/Hz@1 GHz	-104	-132	-131	-130	-134
dBc/Hz@10 GHz	-84	-109	-112	-111	-115
dBc/Hz@20 GHz	-79	-100	-106	-105	-109

## Absolute level accuracy

Frequency range (F)	$0\text{dBm} < P_{\text{out}}$	$-20\text{dBm} < P_{\text{out}} \leq 0\text{dBm}$	$-70\text{dBm} < P_{\text{out}} \leq -20\text{dBm}$	$-70\text{dBm} \geq P_{\text{out}}$
$9\text{kHz} < F \leq 1\text{GHz}$	$\leq \pm 0.5$	$\leq \pm 1.0$	$\leq \pm 2.0$	$\leq \pm 2.0$
$1\text{GHz} < F \leq 10\text{GHz}$	$\leq \pm 0.5$	$\leq \pm 1.0$	$\leq \pm 2.0$	$\leq \pm 2.0$
$10\text{GHz} < F \leq 20\text{GHz}$	$\leq \pm 1.0$	$\leq \pm 1.0$	$\leq \pm 2.0$	$\leq \pm 3.0$